4-2 What to check before diagnosis

4-2-1 Lamp combination expression method display (cassette type indoor unit)

4-2-1-1 1 way, 2 way cassette type

■ Error detection and restart

- When error occurs during operation, indicate a problem with LED flashes, and no other operations but LED stops.
- When restarting operation with remote controller or switch, it will determine the appropriate error mode after normal operation

■ LED lamp display with error detection

Error type	LED lamp display					Causes	Follow-up measures
	Green	Red					
Power reset	◑	×	×	×	×	When indoor and outdoor power is on again	Not an error
Indoor temperature sensor error (Open/Short)	×	×	◑	×	×	• Indoor temperature sensor connector breakaway • Short of temperature sensor wire	• Check the indoor temperature sensor connector • Check the temperature sensor wire
Indoor heat exchanger sensor error Indoor heat exchanger OUT sensor error Indoor emission temperature sensor error (Open/Short) : Heater using models	◑	×	◑	×	×	• Indoor pipe temperature sensor connector breakaway	• Check the temperature sensor connector breakaway
Mixed operation error	×	◑	×	◑	×	Operate cooling & heating operation simultaneously	• Change the operation mode
Indoor fan motor error: maintains for over 15 seconds below 450RPM	×	×	×	◑	×	Not drive the indoor fan motor	• Check the connector breakaway • Check the fan motor lock
Outdoor temperature sensor error COND sensor error DISCHARGE sensor error	◑	×	×	◑	×	Outdoor unit operation error	• Manage after checking the error on the outdoor PCB display window
1. Detect the indoor unit when there is no communication between the indoor unit and outdoor unit for 2 minutes. (When communication error is for over 2 minutes) 2. The indoor unit receives the communication error signal from the outdoor unit 3. The outdoor unit tracking 3 minutes error 4. When the outdoor unit transmits a communication error which is caused by difference between the number of the installation unit and the number of communication unit after completion of tracking. (When communication error is for over 2 minutes)	×	×	◑	◑	×	Comm. error	• Check comm. line connection • Check Indoor/outdoor unit power input • Check Comm. IC

●: On ◑: Flickering ×: Off

■ LED lamp display with error detection (cont.)

Error type	LED lamp display					Causes	Follow-up measures
	Green	Red					
Self diagnosis error display (Include the indoor unit that is not detected) 1. EEV close status defect 2. EEV open status defect 3. EVAP OUT sensor breakaway 4. EVAP IN sensor breakaway	×	×	◑	◑	◑	• Outdoor Unit or self-diagnosis error	• Check if there is an error in Outdoor Unit PCB display then take appropriate steps.
5. COND MID sensor breakaway 6. Refrigerant complete leakage 2nd detection 7. COND high temperature 2nd detection 8. DISCHARGE high temperature 2nd detection 9. Low pressure switch 2nd detection COMP DOWN 10. Reverse phase detection error 11. Freezing 6th detection compressor stop 12. Compression sensor self diagnosis (G8, G9) 13. Compressor down error by compression ratio control	×	×	◑	◑	◑	Outdoor unit operation error	Manage after checking the error on the outdoor PCB display window
Flot switch detection	×	×	×	◑	◑	Overflow of condensed water of indoor unit drain plate	• Check the drain pipe pump • Check the drain pipe clogging
Peripheral control device option setting error	×	×	◑	×	◑	Setting error of the indoor unit option device	Readjust the indoor PCB option S/W
EEPROM error	◑	×	◑	◑	×	Incorrectly input the indoor unit option code	Input the indoor unit option code
EEPROM option error	◑	◑	◑	◑	◑	Not input the indoor unit option code	Input the indoor unit option code
SPI error						• SPI connector dislocation • SPI feedback	Check the connection of SPI Connector

●: On ◑: Flickering ×: Off

- When stopping the operation during an error is displayed, all lamps are off.
- When restarting after stopping an operation, redisplay the error status by deciding the error again on Normal Operation.
- Refer to the "4. Troubleshooting" for detail contents related to the error mode.

4-2-1-2 4 way, mini 4 way cassette type

■ Error detection and restart

- ● When error occurs during operation, indicate a problem with LED flashes, and no other operations but LED stops.
- ● When restarting operation with remote controller or switch, it will determine the appropriate error mode after normal operation

■ LED lamp display with error detection

Error type	LED lamp display					Causes	Follow-up measures
							
Power reset	◑	×	×	×	×	When indoor and outdoor power is on again	Not an error
Indoor temperature sensor error (Open/Short)	×	×	◑	×	×	• Indoor temperature sensor connector breakaway • Short of temperature sensor wire	• Check the indoor temperature sensor connector • Check the temperature sensor wire
Indoor heat exchanger sensor error Indoor heat exchanger OUT sensor error Indoor emission temperature sensor error (Open/Short) : Heater using models	◑	×	◑	×	×	• Indoor pipe temperature sensor connector breakaway	• Check the temperature sensor connector breakaway
Indoor fan motor error: maintains for over 15 seconds below 450RPM	×	◑	×	◑	×	Not drive the indoor fan motor	• Check the connector break-away • Check the fan motor lock
Outdoor temperature sensor error COND sensor error DISCHARGE sensor error	◑	×	×	◑	×	Outdoor unit operation error	• Manage after checking the error on the outdoor PCB display window
1. Detect the indoor unit when there is no communication between the indoor unit and outdoor unit for 2 minutes. (When communication error is for over 2 minutes) 2. The indoor unit receives the communication error signal from the outdoor unit 3. The outdoor unit tracking 3 minutes error 4. When the outdoor unit transmits a communication error which is caused by difference between the number of the installation unit and the number of communication unit after completion of tracking. (When communication error is for over 2 minutes)	×	×	◑	◑	×	Comm. error	• Check comm. line connection • Check Indoor/outdoor unit power input • Check Comm. IC

●: On ◑: Flickering ×: Off

■ LED lamp display with error detection (cont.)

Error type	LED lamp display					Causes	Follow-up measures
							
Self diagnosis error display (Include the indoor unit that is not detected) 1. EEV close status defect 2. EEV open status defect 3. EVAP OUT sensor breakaway 4. EVAP IN sensor breakaway	×	×	◑	◑	◑	Outdoor Unit Operational error	Check error on the Outdoor Unit display window then take appropriate steps.
5. COND MID sensor breakaway 6. Refrigerant complete leakage 2nd detection 7. COND high temperature 2nd detection 8. DISCHARGE high temperature 2nd detection 9. Low pressure switch 2nd detection COMP DOWN 10. Reverse phase detection error 11. Freezing 6th detection compressor stop 12. Compression sensor self diagnosis (G8, G9) 13. Compressor down error by compression ratio control	×	×	◑	◑	◑		
Flot switch detection	×	×	×	◑	◑	Overflow of condensed water of indoor unit drain plate	• Check the drain pipe pump • Check the drain pipe clogging
Peripheral control device option setting error	×	×	◑	×	◑	Setting error of the indoor unit option device	Readjust the indoor PCB option S/W
EEPROM error	◑	×	◑	◑	×	Incorrectly input the indoor unit option code	Input the indoor unit option code
EEPROM option error	◑	◑	◑	◑	◑	Not input the indoor unit option code	Input the indoor unit option code
SPI error						• SPI connector dislocation • SPI feedback	Check the connection of SPI Connector

●: On ◑: Flickering ×: Off

- When stopping the operation during an error is displayed, all lamps are off.
- When restarting after stopping an operation, redisplay the error status by deciding the error again on Normal Operation.
- Refer to the "4. Troubleshooting" for detail contents related to the error mode.

4-2-1-3 Duct type

■ Error detection and restart

- ● When error occurs during operation, indicate a problem with LED flashes, and no other operations but LED stops.
- ● When restarting operation with remote controller or switch, it will determine the appropriate error mode after normal operation

■ LED lamp display with error detection(Remote Control Receiver)

Error type	LED lamp display					Causes	Follow-up measures
	(Reclamation type) Green	Red					
	(Standard type)						
Power reset	◑	×	×	×	×	When indoor and outdoor power is on again	Not an error
Indoor temperature sensor error (Open/Short)	×	×	◑	×	×	• Indoor temperature sensor connector breakaway • Short of temperature sensor wire	• Check the indoor temperature sensor connector • Check the temperature sensor wire
Indoor heat exchanger sensor error Indoor heat exchanger OUT sensor error Indoor emission temperature sensor error (Open/Short) : Heater using models	◑	×	◑	×	×	• Indoor pipe temperature sensor connector breakaway	• Check the temperature sensor connector breakaway
Mixed operation error	×	◑	×	◑	×	Operate cooling & heating operation simultaneously	• Change the operation mode
Outdoor temperature sensor error COND sensor error DISCHARGE sensor error	◑	×	×	◑	×	Outdoor unit operation error	• Manage after checking the error on the outdoor PCB display window
1. Detect the indoor unit when there is no communication between the indoor unit and outdoor unit for 2 minutes. (When communication error is for over 2 minutes) 2. The indoor unit receives the communication error signal from the outdoor unit 3. The outdoor unit tracking 3 minutes error 4. When the outdoor unit transmits a communication error which is caused by difference between the number of the installation unit and the number of communication unit after completion of tracking. (When communication error is for over 2 minutes)	×	×	◑	◑	×	Comm. error	• Check comm. line connection • Check Indoor/outdoor unit power input • Check Comm. IC

●: On ◑: Flickering ×: Off

■ LED lamp display with error detection(Remote Control Receiver) (cont.)

Error type	LED lamp display					Causes	Follow-up measures
	(Reclamation type) Green	(Reclamation type) Red					
	(Standard type)						
Self diagnosis error display (Include the indoor unit that is not detected) 1. EEV close status defect 2. EEV open status defect 3. EVAP OUT sensor breakaway 4. EVAP IN sensor breakaway	×	×	◑	◑	◑	Outdoor Unit Operational error	Check error on the Outdoor Unit display window then take appropriate steps.
5. COND MID sensor breakaway 6. Refrigerant complete leakage 2nd detection 7. COND high temperature 2nd detection 8. DISCHARGE high temperature 2nd detection 9. Low pressure switch 2nd detection COMP DOWN 10. Reverse phase detection error 11. Freezing 6th detection compressor stop 12. Compression sensor self diagnosis (G8, G9) 13. Compressor down error by compression ratio control	×	×	◑	◑	◑		
Plot switch detection	×	×	×	◑	◑	Overflow of condensed water of indoor unit drain plate	• Check the drain pipe pump • Check the drain pipe clogging
Peripheral control device option setting error	×	×	◑	×	◑	Setting error of the indoor unit option device	Readjust the indoor PCB option S/W
EEPROM error	◑	×	◑	◑	×	Incorrectly input the indoor unit option code	Input the indoor unit option code
EEPROM option error	◑	◑	◑	◑	◑	Not input the indoor unit option code	Input the indoor unit option code

●: On ◑: Flickering ×: Off

- When stopping the operation during an error is displayed, all lamps are off.
- When restarting after stopping an operation, redisplay the error status by deciding the error again on Normal Operation.
- Refer to the "4. Troubleshooting" for detail contents related to the error mode.

4-2-1-4 Ceiling type

■ Error detection and reoperation

- If an error occurs during the operation, an LED flickers and the operation is stopped except the LED.
- If you re-operate the air conditioner, it operates normally at first, then detect an error again.

■ Indoor unit LED lamp display at error detecting

Error type	LED lamp display					Operating
						
Power reset	◑	×	×	×	×	
Error of temperature sensor in indoor unit (Open/ Short)	×	×	◑	×	×	Displayed on appropriate indoor unit which is operating
Error of heat exchanger sensor in indoor unit Error of heat exchanger OUT sensor in indoor unit Error of outlet temperature sensor in indoor unit (Open/Short): For heat pump models only	◑	×	◑	×	×	Displayed on appropriate indoor unit which is operating
Error of mixed operation	×	◑	×	◑	×	
Error of indoor fan motor: Below 450RPM for 15 minutes	×	×	×	◑	×	Displayed on appropriate indoor unit which is operating
Error of outdoor temperature sensor Error of COND sensor Error of DISCHARGE sensor	◑	×	×	◑	×	Displayed on appropriate indoor unit which is operating Displayed on outdoor unit
1. No communication for 2 minutes between indoor unit and outdoor unit (communication error for more than 2 minutes) 2. Indoor unit receiving the communication error from outdoor unit 3. Outdoor unit tracking 3 minute error 4. When sending the communication error from outdoor unit due to the mismatching of the communication numbers and installed numbers after completion of tracking (communication error for more than 2 minutes)	×	×	◑	◑	×	1. Error of indoor unit: Displayed on the indoor unit regardless of operation 2. Error of outdoor unit: Displayed on the indoor unit which is operating
Self-diagnostic error (including the indoor unit not detected) 1. Error of electronic expansion valve close 2. Error of electronic expansion valve open 3. Breakaway of EVA OUT sensor 4. Breakaway of EVA IN sensor	×	×	◑	◑	◑	Displayed on appropriate indoor unit which is operating Displayed on outdoor unit

●: On ◑: Flickering ×: Off

■ Indoor unit LED lamp display at error detecting (cont.)

Error type	LED lamp display					Operating
						
5. Breakaway of COND MID sensor 6. 2nd detection of refrigerant completely leak 7. 2nd detection of high temperature COND 8. 2nd detection of high temperature DISCHARGE 9. COMP DOWN due to 2nd detection of low pressure switch 10. Error of reverse phase 11. Compressor down due to 6th detection of freezing 12. Self-diagnosis of condensation sensor (G8, G9) 13. Compressor down due to condensation ratio control	×	×	◑	◑	◑	Displayed on appropriate indoor unit which is operating Displayed on outdoor unit
Error of float switch	×	×	×	◑	◑	
Error of setting option switches for optional accessories	×	×	◑	×	◑	
EEPROM error	◑	×	◑	◑	×	
EEPROM option error	◑	◑	◑	◑	◑	

●: On ◑: Flickering ×: Off

- If you turn off the air conditioner when the LED is flickering, the LED is also turned off.
- If you re-operate the air conditioner, it operates normally at first, then detects an error again.

4-2-1-5 Console type

■ Error detection and reoperation

- If an error occurs during the operation, an LED flickers and the operation is stopped except the LED.
- If you re-operate the air conditioner, it operates normally at first, then detect an error again.

■ Indoor unit LED lamp display at error detecting

Abnormal conditions	LED lamp display					Remark
	White					
	MPI					
Power reset	◑	×	×	×	×	
Error of temperature sensor in the indoor unit (Open/Short)	×	×	◑	×	×	
Error of heat exchanger sensor in the indoor unit	◑	×	◑	×	×	
Error of the outdoor temperature sensor Error of the condensor temperature sensor Error of the discharge temperature sensor	◑	×	×	◑	×	
Indoor Fan Motor is non- operative Indoor Fan Motor is operating slowly Indoor Fan Motor operates at an excessive speed	×	×	×	◑	×	Indoor Fan Motor Error
1. Indoor and outdoor unit time out 2. Abnormal data reception more than 60 packet 3. Indoor unit is not connected 4. Communication error between the outdoor unit Main-Inverter Micom(After 1 minute of Main-Inverter detection)	×	×	◑	◑	×	1. Indoor unit error (Display is unrelated with operation) 2. Outdoor unit error (Display is unrelated with operation)

●: On ◑: Flickering ×: Off

- If you turn off the air conditioner when the LED is flickering, the LED is also turned off.

■ Indoor unit LED lamp display at error detecting

Abnormal conditions	LED lamp display					Remark
	White					
	MPI					
Communication error between indoor units	×	×	◑	◑	◑	
[Self diagnosis]Power voltage detection between indoor and outdoor unit communication cable [Self diagnosis]Outdoor unit refrigerant leakage(Gas leak) [Self diagnosis]Outdoor fan restriction error [Inverter]Inverter compressor operation failure [Inverter] DC peak error [Inverter]DC Link voltage 150V or less, 410V or more [Inverter] Compressor rotation error [Inverter]Electric current error [Inverter]DC Link sensor error [Inverter]EEPROM READ/WRITE error [Inverter]Inverter zerocrossing error Setting the outdoor unit capacity option error	×	×	◑	◑	◑	
Error of setting option switches for optional accessories	×	×	◑	×	×	
EEPROM error	◑	×	◑	◑	×	
EEPROM option error	◑	◑	◑	◑	◑	
MPI no feedback Error	×	×	×	×	◑	

●: On ◑: Flickering ×: Off

- If you turn off the air conditioner when the LED is flickering, the LED is also turned off.

4-2-1-6 Wall-mounted tyle (Neo Forte)

■ Error detection and reoperation

- If an error occurs during the operation, an LED flickers and the operation is stopped except the LED.
- If you re-operate the air conditioner, it operates normally at first, then detect an error again.

■ Indoor unit LED lamp display at error detecting

Abnormal conditions	LED lamp display			Remark
	OPERATION	TIMER	TURBO	
				
Indoor unit room temperature sensor error (open or short)	○	◑	○	
Indoor unit heat exchanger temperature sensor error (open or short)	◑	◑	○	
Indoor fan motor malfunction	○	○	◑	
EEPROM error	◑	◑	◑	Option Setting
Option error (option wasn t set up or option data error)	◑	◑	◑	Option Setting
Outdoor unit error	◑	○	◑	Remote Control on/off Outdoor Unit Power Reset

4-2-1-7 Wall-mounted tyle (Vivace/Montblanc)

Display	LED lamp display	Remark
E1↔01	Communication error (unable to receive data)	Communication cable connection
E1↔02	Communication error (outdoor cannot communicate)	Another indoor unit or indoor PCB
E1↔21	Indoor unit room temperature sensor error (Open/Short)	Room temperature sensor, indoor PCB
E1↔22	Indoor unit heat exchanger in temperature sensor error (Open/Short)	Heat exchanger in sensor, indoor PCB
E1↔23	Indoor unit heat exchanger out temperature sensor error (Open/Short)	Heat exchanger out sensor, indoor PCB
E1↔28	Indoor unit heat exchanger in temperature sensor detached	Heat exchanger in sensor
E1↔29	Indoor unit heat exchanger out temperature sensor detached	Heat exchanger out sensor
E1↔30	Indoor unit heat exchanger in & out temperature sensor detached	Heat exchanger in & out sensor
E1↔54	Indoor unit fan motor malfunction	Fan motor and cable
E1↔61	More than 2 indoor units cool and heat simultaneously	Another indoor unit operation mode
E1↔62	EEPROM error	Indoor PCB
E1↔63	Option code setting error	Option code
E1↔85	Cable miss-wiring	Cable connection (Indoor & Outdoor unit)
E1↔86	MPI error malfunction	MPI
E2↔01	The number of indoor unit mismatched	Cable connection (another indoor unit & outdoor unit), SW01(outdoor)
E2↔51	Compressor discharge sensor error(Short/Open)	Outdoor unit
E5↔59	Outdoor unit error	Outdoor unit (Error code)

4-2-2 Numeric type display(outdoor unit, MCU, Wired remote controller, wall-mount type etc.)

■ Meanings of the first Alphabet numbers in Error Numbers

E	P	U	A
Displayed in numbers 101 to 700 Displayed when a self-diagnosis turns out to be an Error.	Displayed in numbers 701 to 800 Displayed when the first detection has been completed for those items that requires more than 2 detections	Indicate the address of an outdoor unit that occurs errors U200 : Main outdoor unit U201 : Sub1 outdoor unit U202 : Sub2 outdoor unit U203 : Sub3 outdoor unit	Indicate the address of an indoor unit that occurs errors ex) A000 : error occurs in the indoor unit with the address 0 ex) A047: error occurs in the indoor unit with the address 47

■ Error display order

Classification	Error display method	Display examples
Error display method for ones occurred in indoor unit	Error no. → indoor unit address → error no., repeated	E471 → A002 → E417 → A002
Error display method for ones occurred in outdoor unit	Error no. → outdoor unit address → error no., repeated	E471 → U200 → E417 → U200
Error display method for ones occurred in MCU	Error no. → MCU address → error no., repeated	E218 → Cxyz → E218 → Cxyz Meanings of XYZ(branch part setup related error) X : ten's digit of MCU address Y : one's digit of MCU address Z : Order of the branch part ex) C00B: No. 00 MCU's 2nd branch part ex) C01: No.01 MCU, not relevant to any branch part

● Indicate the address of the smallest indoor unit only when the same error occurs in multiple units.

■ **Error display order (cont.)**

Error mode	Cause	Measures to take	Product's operation condition during error(Main parts status)				Diagnosis method
			Frequency	Outdoor unit status	Error occurred indoor unit.	Other indoor units	
121	Dislocation of indoor temp. sensor connector Wire breaking of indoor temp. sensor Defective indoor temp. sensor	• Check if the wire of indoor temp. sensor is broken • Check if there is any problem in indoor temp sensor connection circuit and in sensor	1	Normal operation	Operation off	Normal operation	page 4-31
122	Dislocation of In-sensor connector in IU's heat exchanger In-sensor wire breaking in IU's heat exchanger Defective In-sensor in IU's heat exchanger	• Check if the wire of in-temp sensor of IU heat exchanger is broken • Check if there is any problem in In-temp. sensor connection circuit and sensor of IU heat exchanger	1	Normal operation	Operation off	Normal operation	page 4-32
123	Dislocation of Out-sensor connector in IU's heat exchanger Out-sensor wire breaking in IU's heat exchanger Defective Out-sensor in IU's heat exchanger	• Check if the wire of Out-temp sensor of IU heat exchanger is broken • Check if there is any problem in Out-temp. sensor connection circuit and sensor of IU heat exchanger	1	Normal operation	Operation off	Normal operation	page 4-33
128	IU's heat exchanger in sensor dislocation error	• Check if the in sensor of IU's heat exchanger is dislocated • Check if the holder of in sensor of IU's heat exchanger is attached	1	Normal operation	Operation off	Normal operation	page 4-34
129	IUs' heat exchanger out sensor dislocation error	• Check if the out sensor of IU's heat exchanger is dislocated • Check if the holder of out sensor of IU's heat exchanger is attached	1	Normal operation	Operation off	Normal operation	page 4-35
130	Simultaneous IU's heat exchanger in.out sensor dislocation error	• Check if the in,out sensor of IU's heat exchanger is dislocated • Check if the holder of in, out sensor of IU's heat exchanger is attached	1	Normal operation	Operation off	Normal operation	page 4-36
135	Indoor clean fan rotational frequency feedback error	• Check the feedback connection line • Check the rotational output of the clean fan motor • Check if the motor operates well	1	Normal operation	Normal in other Functions	Normal operation	page 4-37
151	The 2nd opening error of indoor electrically operated valve	• Check the PCB connection of electrically operated valve wire • Check the sealing condition of electrically operated valve • Check if there is any external rust, internal breakage/short circuit on the coil • After resetting OU(K3), re-check if error occurs again • Replace electrically operated valve if the breakdown is confirmed	2	Operation off	Operation off	Normal operation	page 4-38
152	The 2nd closing error of indoor electrically operated valve	• Check the PCB connection of electrically operated valve wire • Check the sealing condition of electrically operated valve • Check if there is any external rust, internal breakage/short circuit on the coil • After resetting OU (K3), re-check if error occurs again • Replace electrically operated valve if the breakdown is confirmed	2	Operation off	Operation off	Normal operation	page 4-39
153	Indoor floating sensor error	• Check if the wire of indoor floating sensor is broken • Check if the wire of drain pump is broken • Check if the drain pump operates well	1	Operation off	Operation off	Normal operation	page 4-40
154	Indoor fan error	• Check the feedback connection line • Check the rotational output of the fan motor • Check if the motor operates well	1	Normal operation	Operation off	Normal operation	page 4-41
161	Mixed operation error	• When additional Indoor unit is under heating operation during cooling operation for outdoor unit or other Indoor unit • When additional Indoor unit is under cooling operation during heating operation for outdoor unit or other Indoor unit • Applied only to Heat Pump model (no mixed operation error for HR model) • Due to wrong Indoor unit operation order and stop or change an operational mode for the relevant Indoor unit	1	Normal operation	Operation off	Normal operation	page 4-42
162	Defective EEPROM part Defective EEPROM circuit	• Check if there is wire breaking/nonwetting/dewetting of circuits around EEPROM parts	1	Normal operation	Operation off	Normal operation	page 4-43

■ **Error display order (cont.)**

Error mode	Cause	Measures to take	Product's operation condition during error(Main parts status)				Diagnosis method
			Frequency	Outdoor unit status	Error occurred indoor unit.	Other indoor units	
163	Indoor unit remote controller option input is wrong/not entered.	• Re-enter remote controller option	1	Normal operation	Operation off	Normal operation	page 4-44
170	Mixed use of Fahrenheit/Celsius setup (occurs in indoor unit with Celsius setup)	• Input Celsius options in the remote controllers for error free indoor units (Celsius using regions)	1	Normal operation	Operation off	Normal operation	page 4-44
180	1st simultaneous MCU SOL Valve cooling/heating opening	• Check the address of MCU SOL valve connector and the position of cooling/heating connection • Check the sealing condition of SOL Valve coil • Check if the same error occurs after resetting the set-stopped OU • When power is applied to SOL Valve, check if it operates well (check the valve working sound) • Replace the valve if broken	1	Restart	Restart	Operation off	page 4-45
181	2nd simultaneous MCU SOL Valve cooling/heating opening	• Check the address of MCU SOL valve connector and the position of cooling/heating connection • Check the sealing condition of SOL Valve coil • Check if the same error occurs after resetting the set-stopped OU • When power is applied to SOL Valve, check if it operates well (check the valve working sound) • Replace the valve if broken	2	Operation off	Operation off	Operation off	page 4-45
185	Power input Error into indoor unit comm. line	• Reconfirm the indoor unit comm.. line connection – power line input	1	Operation off	Operation off	Operation off	page 4-46
186	Clean Unit (SPI) feedback error	• Check the connection of SPI feedback • Check if SPI operates well	1	Normal operation	Normal in other functions	Normal operation	page 4-47
190	While pipe testing, there are no temperature difference in EVA_IN or temperature changes in incorrect indoor unit EVA_IN	• Check if the indoor unit ADDRESS is same as the set ADDRESS on MCU • Check the MCU indoor unit setting switch	1	Normal operation	Operation off	Normal operation	page 4-48
191	While pipe testing, there are no temperature difference in EVA_OUT or temperature changes in incorrect indoor unit EVA_OUT	• Check if the indoor unit ADDRESS is same as the set ADDRESS on MCU • Check the MCU indoor unit setting switch	1	Normal operation	Operation off	Normal operation	page 4-48
201	Comm. Error among. Indoor units and outdoor units after completing initial tracking Inconsistency between the number of setup IUs and the unit number setup switches	• Check the comm. lines between Indoor/outdoor units • Check the setup address switch on the Indoor unit's PCB • Check IU No. setup switch on the outdoor unit's PCB	1	Operation off	Operation off	Operation off	page 4-49
202	Comm. Error among all IUs	• Check the comm. lines between Indoor/outdoor units • Check the main/sub unit setup switch • Check the number of indoor unit setting switch on the outdoor unit PCB	1	Operation off	Operation off	Operation off	page 4-51
203	Comm. Error between main & sub outdoor units Comm. Error between main & sub Micoms	• Check the comm. lines between outdoor units • Check the Main/Sub unit setting switch/outdoor units • Check for the disconnected line/cold solder/short circuit between Main/Sub MICOM	1	Operation off	Operation off	Operation off	page 4-52
204	Comm. Error bet. outdoors and MCU after completing initial tracking Inconsistency between the number of setup MCU and the unit number setup switches	• Check the comm. lines between outdoor units and MCU • Check the setup address switch on MCU • Check No. of MCU setup switch on the outdoor unit's PCB	1	Operation off	Operation off	Operation off	page 4-53
210	Comm, cut-off with MCU for over 2 min.	• Check the comm. lines between Indoor/outdoor units/MCUs • Check MCU address setup switch • Check MCU No. setup switch on the outdoor unit's PCB	1	Operation off	Operation off	Operation off	page 4-54
211	Not consecutive connection between indoor unit and 2 branch parts in MCU	• Check connection piping bet. MCU and IU • Check MCU branch part setup switch and indoor address switch setup	1	Operation off	Operation off	Operation off	page 4-55

■ **Error display order (cont.)**

Error mode	Cause	Measures to take	Product's operation condition during error(Main parts status)				Diagnosis method
			Frequency	Outdoor unit status	Error occurred indoor unit.	Other indoor units	
212	If same indoor unit ADDRESS was assigned more than 3 times on MCU.	• Check connection piping bet. MCU and IU • Check MCU branch part setup switch and indoor address switch setup	1	Operation off	Operation off	Operation off	page 4-56
213	When indoor unit ADDRESS was assigned to an indoor unit that was not installed.	• Check connection piping bet. MCU and IU • Check MCU branch part setup switch and Indoor address switch setup	1	Operation off	Operation off	Operation off	page 4-57
214	If outdoor unit has wrong No. of MCU when there are more than 2 MCU connections with the same address	• Check connection piping bet. MCU and IU • Check MCU branch part setup switch and Indoor address switch setup	1	Operation off	Operation off	Operation off	page 4-58
215	When MCU's indoor unit setup address switch is set overlapped	• Check connection piping bet. MCU and IU • Check MCU branch part setup switch and indoor address switch setup	1	Operation off	Operation off	Operation off	page 4-59
216	If MCU pipe is not connected but set as being used	• Check the connection piping bet. MCU & IU • Check the MCU branch part setup switch & Indoor Unit address switch setup	1	Operation off	Operation off	Operation off	page 4-60
217	While MCU pipe use setup switch turned off, IU is registered	• Check the connection piping bet. MCU & IU • Check the MCU branch part setup switch & Indoor Unit address switch setup	1	Operation off	Operation off	Operation off	page 4-61
218	When the no. of registered IUS in MUC is at least one unit more than the no. installed	• Check the connection piping bet. MCU & IU • Check the MCU branch part setup switch & Indoor Unit address switch setup	1	Operation off	Operation off	Operation off	page 4-62
221	Outdoor unit Temp SENSOR ERROR(Open/Short) • Error level: over 4.9V(-50°), below 0.4V(93°)	• Check the connection part of the outdoor temp. sensor circuit and any problem in the sensor. • Check the wire breaking of the outdoor temp. sensor circuit and the connection status of the connector PCB	1	Operation off	Operation off	Operation off	page 4-63
226	Outdoor temp. sensor dislocation error	• Check if the outdoor temp. sensor is mounted in the right position	1	Operation off	Operation off	Operation off	page 4-64
231	COND_OUT Main Temp SENSOR ERROR (Open/Short) • Error level: over 4.9V (-50°), below 0.4V (93°)	• Check the connection part of the COND OUT temp. sensor circuit and any problem in the sensor • Check the wire breaking of the COND OUT temp. sensor circuit and the connection status of the connector PCB	1	Operation off	Operation off	Operation off	page 4-65
241	Outdoor COND OUT temp. sensor dislocation error	• Check if the outdoor COND OUT sensor is mounted in the right position	1	Operation off	Operation off	Operation off	page 4-66
251	Digital compressor discharge temp. error (Open/Short) • Error detection condition: outdoor temp. over - 10 ° • Error level: over 4.95V (-50°), below 0.4V (93°)	• Check the connection part of the digital compressor discharge temp. sensor circuit and any problem in the sensor. • Check the wire breaking of the digital compressor discharge temp. sensor circuit and the connection status of the connector PCB	1	Operation off	Operation off	Operation off	page 4-67
257	Fixed scroll compressor 2 compressor discharge temp. error (Open/Short) • Error detection condition: outdoor temp. over - 10 ° • Error level: over 4.95V (-30°), below 0.5V (151°)	• Check the connection part of fixed scroll compressor 2's discharge temp. sensor circuit and any problem in the sensor. • Check the wire breaking of the fixed scroll compressor 2's discharge temp. sensor circuit and the connection status of the connector PCB	1	Operation off	Operation off	Operation off	page 4-68
258	Fixed scroll compressor 3 compressor discharge temp. error (Open/Short) • Error detection condition: outdoor temp. over - 10 ° • error level: over 4.95V (-30°), below 0.5V (151°)	• Check the connection part of fixed scroll compressor 3's discharge temp. sensor circuit and any problem in the sensor. • Check the wire breaking of the fixed scroll compressor 3's discharge temp. sensor circuit and the connection status of the connector PCB	1	Operation off	Operation off	Operation off	page 4-68

■ **Error display order (cont.)**

Error mode	Cause	Measures to take	Product's operation condition during error(Main parts status)				Diagnosis method
			Frequency	Outdoor unit status	Error occurred indoor unit.	Other indoor units	
261	Digital compressor discharge temp. Sensor dislocation error	• Check if the digital compressor discharge temp. sensor is mounted in the right position	1	Operation off	Operation off	Operation off	page 4-69
263	Fixed scroll compressor 2 discharge temp. Sensor dislocation error	• Check if the fixed scroll compressor 2's discharge temp. sensor is mounted in the right position	1	Operation off	Operation off	Operation off	page 4-69
264	Fixed scroll compressor 3 discharge temp. Sensor dislocation error	• Check if the fixed scroll compressor 3's discharge temp. sensor is mounted in the right position	1	Operation off	Operation off	Operation off	page 4-69
265	SUMP sensor dislocation	• Check if SUMP sensor location is mounted in the right position	1	Operation off	Operation off	Operation off	page 4-70
269	SUCTION sensor dislocation	• Check if SUCTION sensor location is mounted in the right position	1	Operation off	Operation off	Operation off	page 4-71
271	SUMP_Temp Digital SENSOR ERROR (Open/Short) • Error detection condition: outdoor temp. over -10 ° • error level: over 4.95V (-30°), below 0.5V (151°)	• Check the connection part of SUMP_Temp Digital sensor circuit and any problem in the sensor • Check for disconnected SUMP temperature power line and the PCB connection	1	Operation off	Operation off	Operation off	page 4-72
291	Detect only high pressure SENSOR ERROR (Open/Short) compressor (short error: detect only below 0.4V) (Open error: detect only over 4.2V)	• Check the wire breaking of high pressure sensor • Check the high pressure sensor circuit and any problem in the sensor	1	Operation off	Operation off	Operation off	page 4-73
296	Detect only low pressure SENSOR ERROR (Open/Short) compressor (short error: detect only below 0.4V) (Open error: detect only over 4.2V)	• Check the wire breaking of low pressure sensor • Check the low pressure sensor circuit and any problem in the sensor	1	Operation off	Operation off	Operation off	page 4-73
307	Balance keeping sensor connector dislocation Balance keeping sensor wire breaking Defective balance keeping sensor	• Check if balance keeping sensor wire is broken • Check the balance keeping sensor connection circuit and any problem with sensor	1	Operation off	Operation off	Operation off	page 4-74
308	Suction temp. sensor connector dislocation Suction temp. sensor wire breaking Defective suction temp. sensor	• Check if a suction sensor wire is broken • Check the suction sensor connection circuit and any problem with sensor	1	Operation off	Operation off	Operation off	page 4-75
311	Liquid pipe temp. sensor connector dislocation Liquid pipe temp. sensor wire breaking Defective liquid pipe temp. sensor	• Check if a liquid pipe temp. sensor wire is broken • Check the liquid pipe temp. sensor connection circuit and any problem with sensor	1	Operation off	Operation off	Operation off	page 4-76
321	EVI In temp. sensor dislocation EVI In temp. sensor wire breaking Defective EVI In temp. sensor	• Check if EVI sensor is broken • Check EVI sensor connection circuit and any problem with sensor	1	operation off	operation off	operation off	page 4-77
322	EVI Out connector dislocation EVI Out connector wire breaking Defective EVI Out connector	• Check if EVI OUT sensor is broken • Check EVI OUT sensor connection circuit and any problem with sensor	1	Operation off	Operation off	Operation off	page 4-78
407	Compressor down by high pressure sensor protection control	• Check if a service valve is open • Compare the values between manifold gauge and S-net: check if there are any problems with high pressure sensor • Check if indoor/outdoor EEV operates • Check if there is any clog in the piping such as filters • Check if the fan operates well • Check the amount of refrigerants (overcharging)	1	Operation off	Operation off	Operation off	page 4-79

Troubleshooting

■ **Error display order (cont.)**

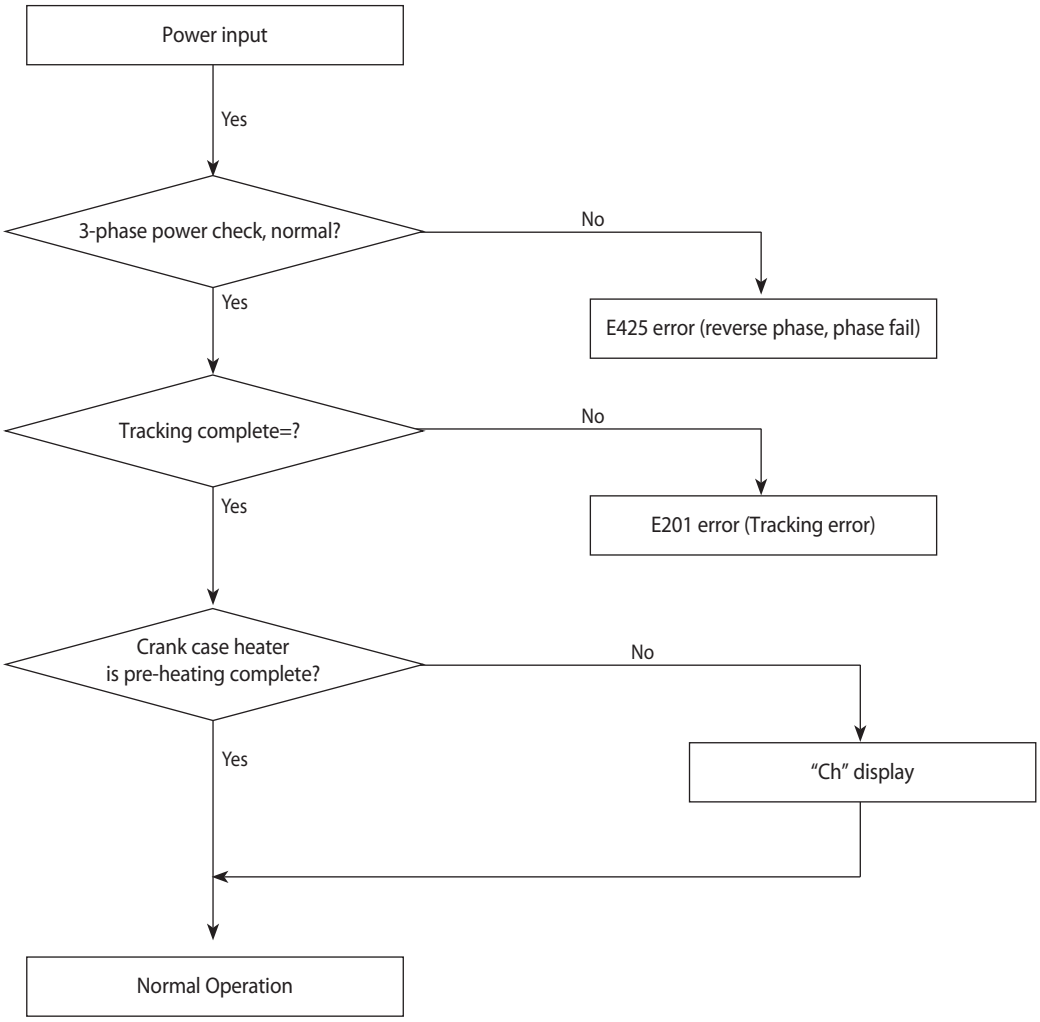
Error mode	Cause	Measures to take	Product's operation condition during error(Main parts status)				Diagnosis method
			Frequency	Outdoor unit status	Error occurred indoor unit.	Other indoor units	
410	Compressor down by low pressure sensor protection control	• Check if a service valve is open • Compare the values between manifold gauge and S-net: Check if there are any problems with high pressure sensor • Check if indoor/outdoor EEV operates • Check if there is any clog in the piping such as filters • Check the amount of refrigerants (shortage)	1	Operation off	Operation off	Operation off	page 4-80
416	Compression down by discharge temp.	• Check the resistance of discharge sensors • Check if a service valve is open • Compare the values between manifold gauge and S-net: Check if there are any problems with high pressure sensor • Check if indoor/outdoor EEV operates • Check if there is any clog in the piping such as filters	1	Operation off	Operation off	Operation off	page 4-81
425	Outdoor compression ratio 1 error	• Check 3-phase connection error • Check if there is any problem with 3-phase detection part circuit.	1	Operation off	Operation off	Operation off	page 4-82
428	Compressor down by compressor ratio control	• Check if a service valve is open • Compare the values between manifold gauge and S-net: Check if there are any problems with high pressure sensor • Check if indoor/outdoor EEV operates • Check if there is any clog in the piping such as filters • Check the amount of refrigerants (shortage)	1	Operation off	Operation off	Operation off	page 4-83
431	Balance keeping valve 1 self-diagnosis	• Check if there is any dislocation/pbm. with oil valve temp sensor 1 • Check if an oil service valve is open • Check if there is any pbm with a valve connector/coil setting	1	Operation off	Operation off	Operation off	page 4-84
440	Prohibit heating for outdoor temperature over 30°	• Check if there is any dislocation/pbm. with outdoor temp sensor • If outdoor temp measured normal, normal operation by protective control	1	Operation off	Operation off	Operation off	page 4-85
442	Prohibit filling mode for outdoor temperature over 15°	• Check if there is any dislocation/pbm. with outdoor temp sensor • If outdoor temp measured normal, normal operation by protective control	1	Operation off	Operation off	Operation off	page 4-85
452	Instant blackout error (delete when compressor reruns) OU power frequency error	• Check outdoor power connection line • Check if there is wire breaking/nonwetting/dewetting of the PCB power input part • Check the power frequency	1	Operation off	Operation off	Operation off	page 4-86
453	Error by high temp. outdoor fan	• Check the motor temp. • Check the fan motor's rotational output • Check if the motor operate well	1	Operation off	Operation off	Operation off	page 4-86
454	Displayed when outdoor fan's RPM is lower then 50	• Check the feedback connection line • Check the fan motor's rotational output • Check if the motor operates well	1	Operation off	Operation off	Operation off	page 4-86
456	Outdoor fan over voltage error	• Motor connection line • Check if the motor operates well	1	Operation off	Operation off	Operation off	page 4-87

■ **Error display order (cont.)**

Error mode	Cause	Measures to take	Product's operation condition during error(Main parts status)				Diagnosis method
			Frequency	Outdoor unit status	Error occurred indoor unit.	Other indoor units	
457	Outdoor fan counter rotation error	• Check feedback connection line • Check if the motor operates well • Check the fan motor's rotational output • Occurs with the motor's counter-rotation by reverse wind	1	Operation off	Operation off	Operation off	page 4-87
458	Detect over voltage in COMP current sensor	• Check if there is any problem with COMP • Check the electric leakage for COMP connecting wire	1	Operation off	Operation off	Operation off	page 4-88
461	Detect low voltage in COMP current sensor	• Check COMP connection wire • Check defective COMP Magnet switch	1	Operation off	Operation off	Operation off	page 4-89
702	1st close indoor electrically operated valve	• Check the PCB connection of electrically operated valve wire • Check the sealing condition of electrically operated valve • Check if there is any external rust, internal breakage/short circuit on the coil • After resetting OU (K3), re-check if error occurs again	1	Normal operation	Operation off	Normal operation	page 4-90
703	1st open indoor electrically operated valve	• Check the PCB connection of electrically operated valve wire • Check the sealing condition of electrically operated valve • Check if there is any external rust, internal breakage/short circuit on the coil • After resetting OU (K3), re-check if error occurs again	1	Re-start	Re-start	Normal operation	page 4-91

4-3 How to take measures for each symptom

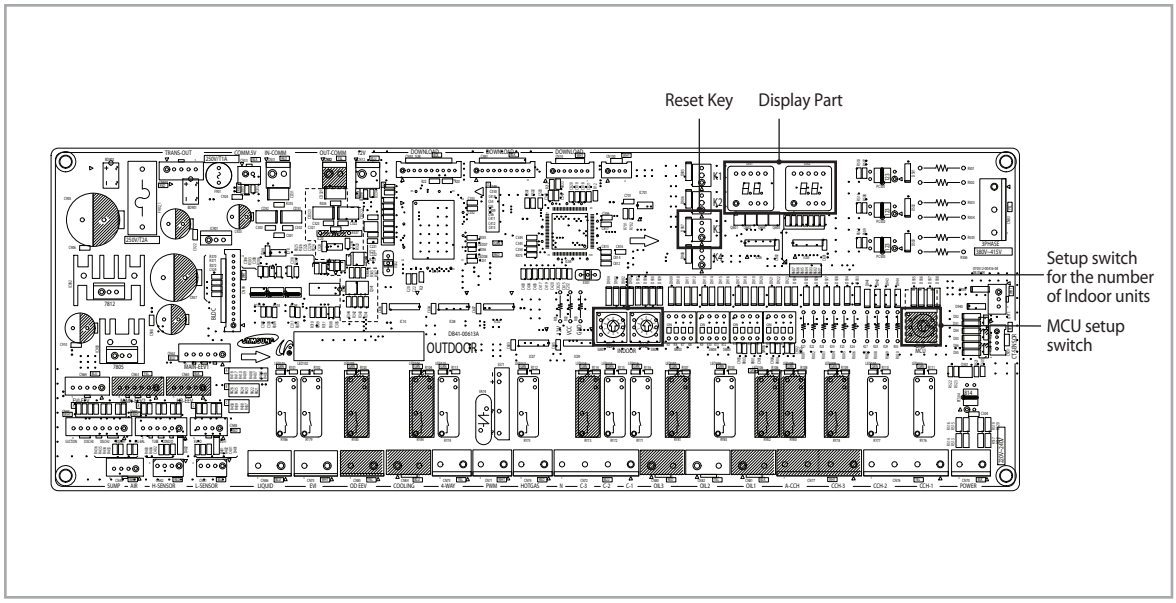
4-3-1 Outdoor unit operation flow



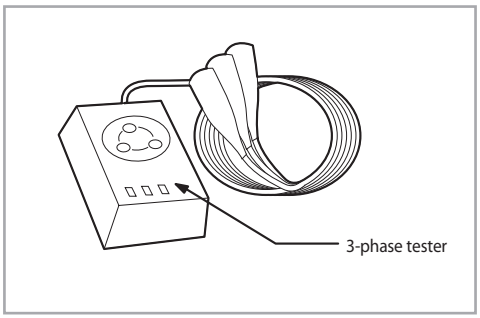
■ Reverse phase, phase fail detection (Outdoor unit using 3-phase power) – E425 display with any problems

1. When power is on, it checks the power status used for 3-phase power compressor.

When the order of 3-phase L1(R) – L2(S) – L3(T) is changed (reversed) or there is a phase that does not receive power (phase fail), it will display E425 and the air conditioner will stop operating.



1) Check if the power is L1(R) – L2(S) phase/ L1(R) – L3(T) phase/ L2(S) – L3(T) phase.
2) When there is any terminal that does not have normal voltage, check the external power of the air conditioner and take appropriate measures.
3) If 3-phase power is normal check the phase of the power line using 3-phase tester.
   If it shows reverse phase, please change the current power line connection.
4) After completing above, press reset key (K3) then check the power again.
5) If the same problem occurs during the second check-up, check the color of the 3-phase power check lines. If there is no problem, please replace PCB.



● When there is a wrong line connection on N phase (when one of R, S and T is changed with N phase), DVM PLUS3 carries out power protection to display E425 and cut off the power within 1 minute.
If that happens, it is not a PCB power defect and check the phase of power lines before replacing PCB.

■ Initial Tracking (Communication Check) – E201 display with any problems

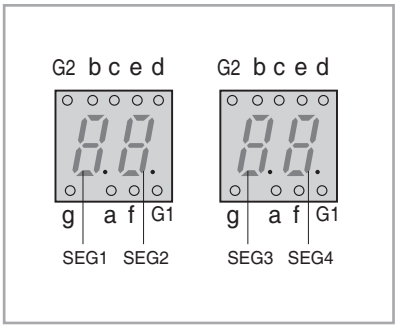
1. Depending on whether an outdoor unit is a master unit or sub unit, there are some differences in what is displayed.

1) Master Unit

- When power is on, outdoor unit MICOM tries to communicate with indoor units that are connected to its communication line (F1/F2).
- 2 display parts on the left show the main address of the indoor units subject to a communication attempt made by the outdoor unit in sequential order. (Ex: 0,1,2 ~47)
- 2 display parts on the right show the main address of the indoor units with which the outdoor unit successfully communicated.
- When there is discrepancy in the number of indoor unit setup by the outdoor unit and those where communication was made, the four display parts shows E201.

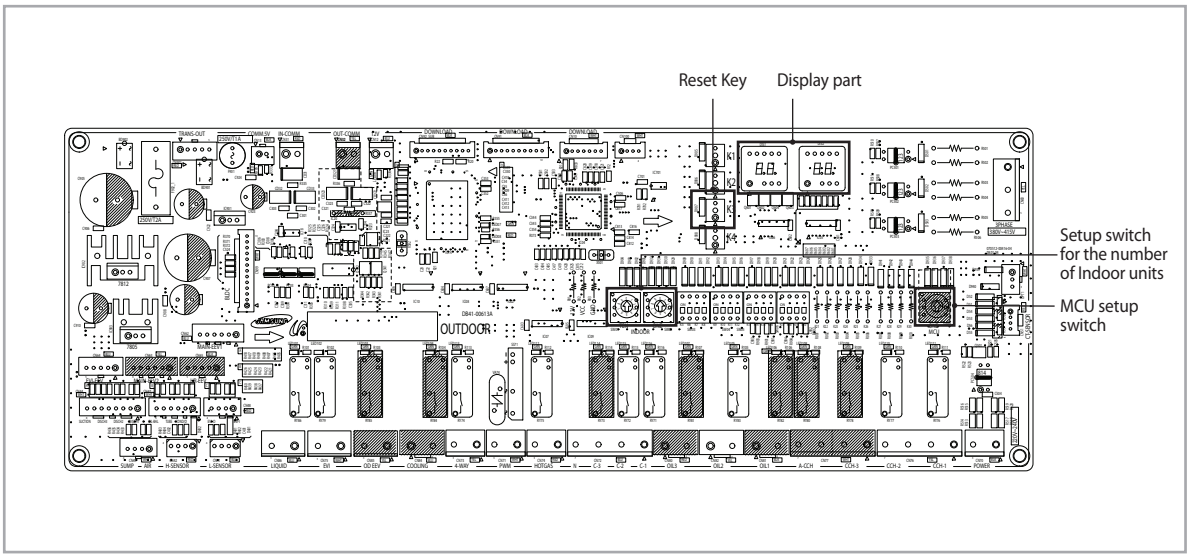
2) Sub(Slave) Unit

- It shows the MICOM address of MAIN PBA within the sub unit that is connected to a master unit in turn. (ex: C9, CA, CB, CC, CD, CE, DF)



The display part of an outdoor unit

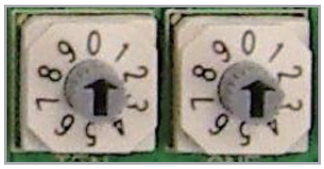
2. Figure out the number of indoor units connected to the outdoor unit through a setup switch for the number of indoor unit .



Setup switch for the number of Indoor units

The following is an example of how to use a switch for the number of indoor units installed.
The max. number of units for connection is 64.

3 units Connection		17 units Connection		31 units Connection		64 Units Connection	
Tenth Digit	Single Digit	Tenth Digit	Single Digit	Tenth Digit	Single Digit	Tenth Digit	Single Digit
0	3	1	7	3	1	6	4



Tenth Digit (0~9) Single Digit (0~9)

3. When there is a discrepancy between the number of indoor units detected through a setup switch for the no. of indoor units and the number of indoor units detected in the tracking process, E210 and U200 will be displayed in turn.

■ Compressor pre-heating – CH displayg

1. When tracking is completed, check compressor temperature before moving onto the system operation to determine if it is ready to operate.

2. If it has all conditions to operate the compressor, the flashing light of the CH will disappear and the left display part will show the address of the indoor units subject to the outdoor unit's communication attempt while the right one shows the address of the indoor units that have responded to the communication.

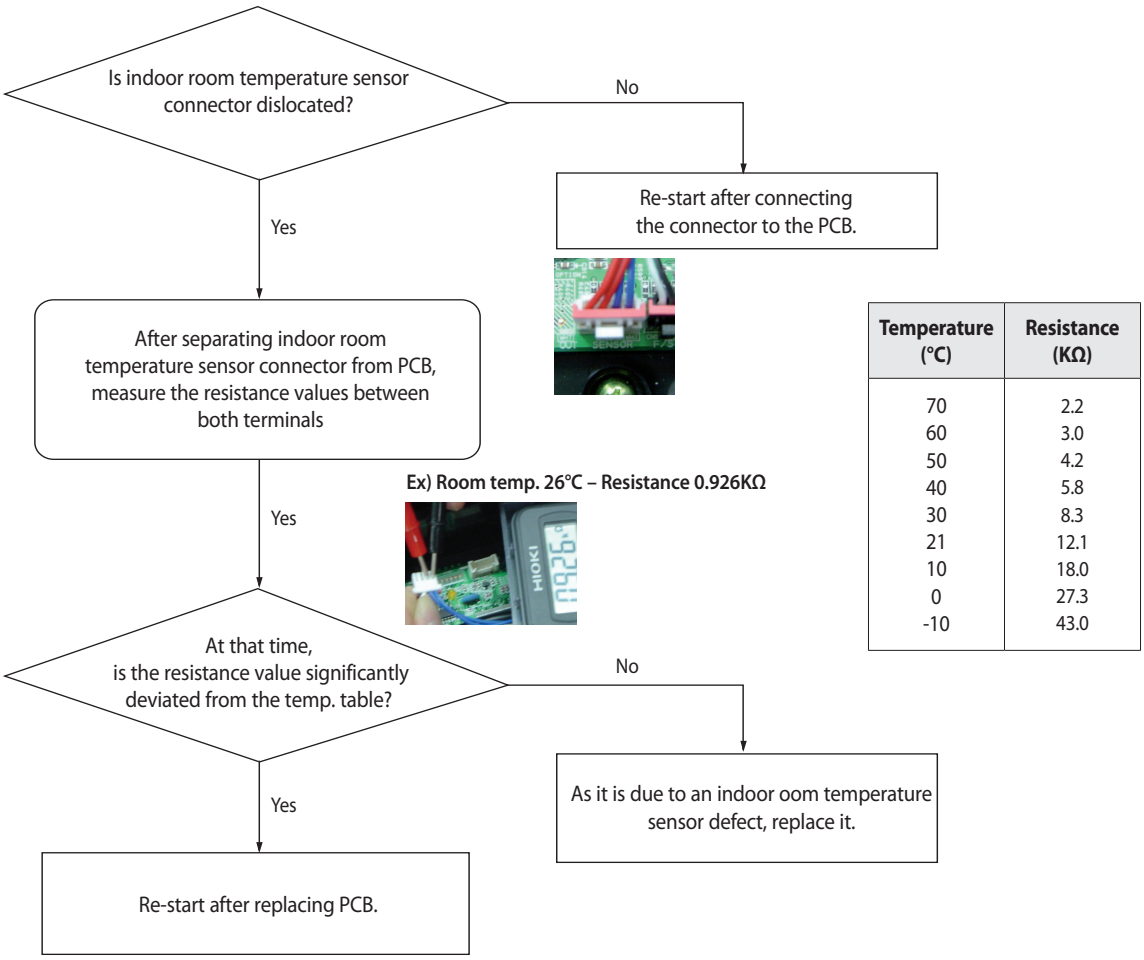
3. When it is not suitable to immediately operate the compressor, the display part flickers CH and heats the compressor with CCH (Crank Case Heater) for 2 hours and 30 minutes.

4. Whether or not it is at a suitable temperature to operate is determined once after turning on the power.
   However, for the first time of carrying out the test operation after installation please input the power six hours before test operation.

4-3-2 Indoor Unit ROOM sensor Error (Open/Short)

Outdoor unit display	E121 ↔ A xxx (xxx : The address of the error occurred indoor unit)
Indoor unit display	×(Operation) ◑(Timer) ×(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• The room temperature sensor of No. XXX indoor unit has defective OPEN/SHORT

1. How to check

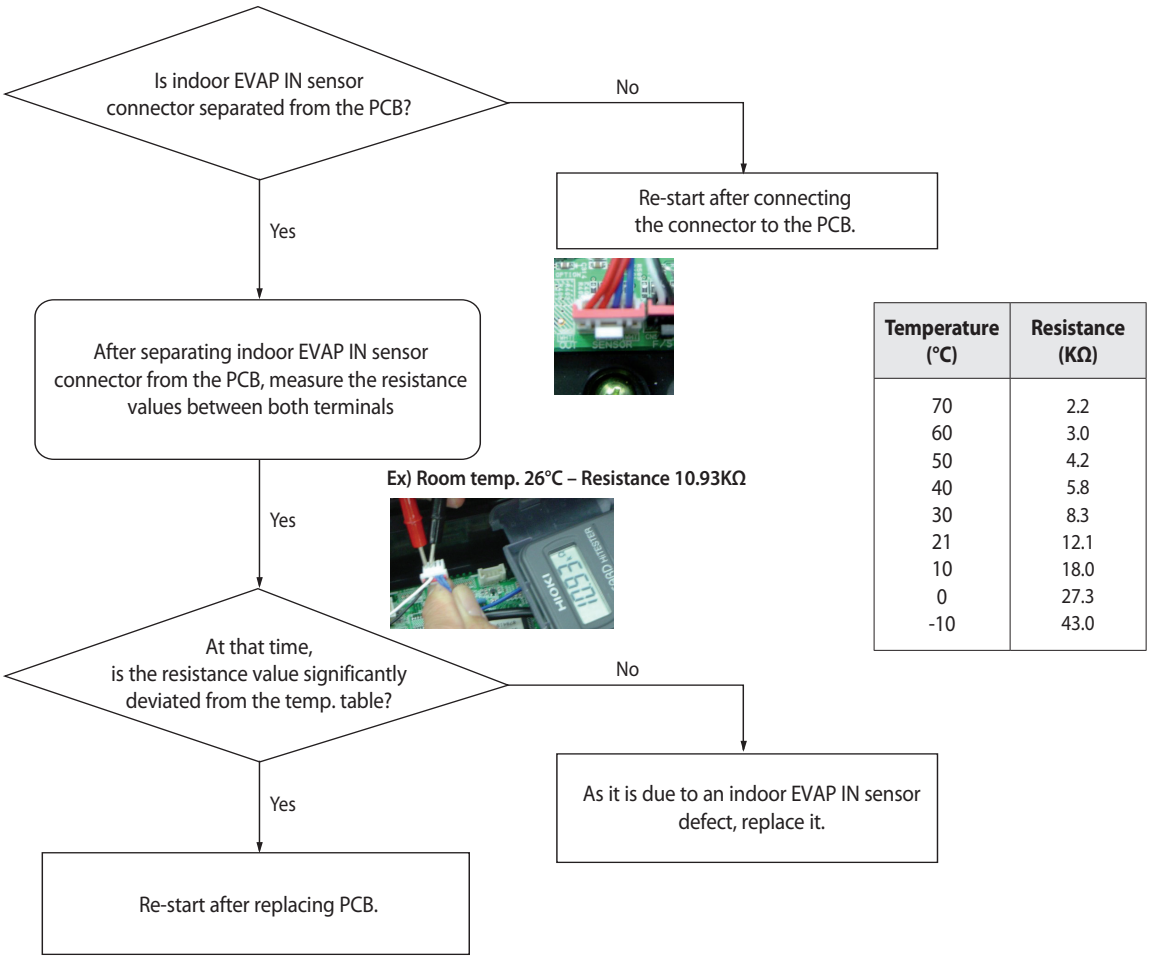


Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-3 Indoor unit EVAP IN sensor Error (Open/Short)

Outdoor unit display	E 122 ↔ A xxx (xxx : The address of the error occurred indoor unit)
Indoor unit display	◑(Operation) ◑(Timer) ×(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• The EVAP IN sensor of No. XXX indoor unit has defective OPEN/SHORT

1. How to check

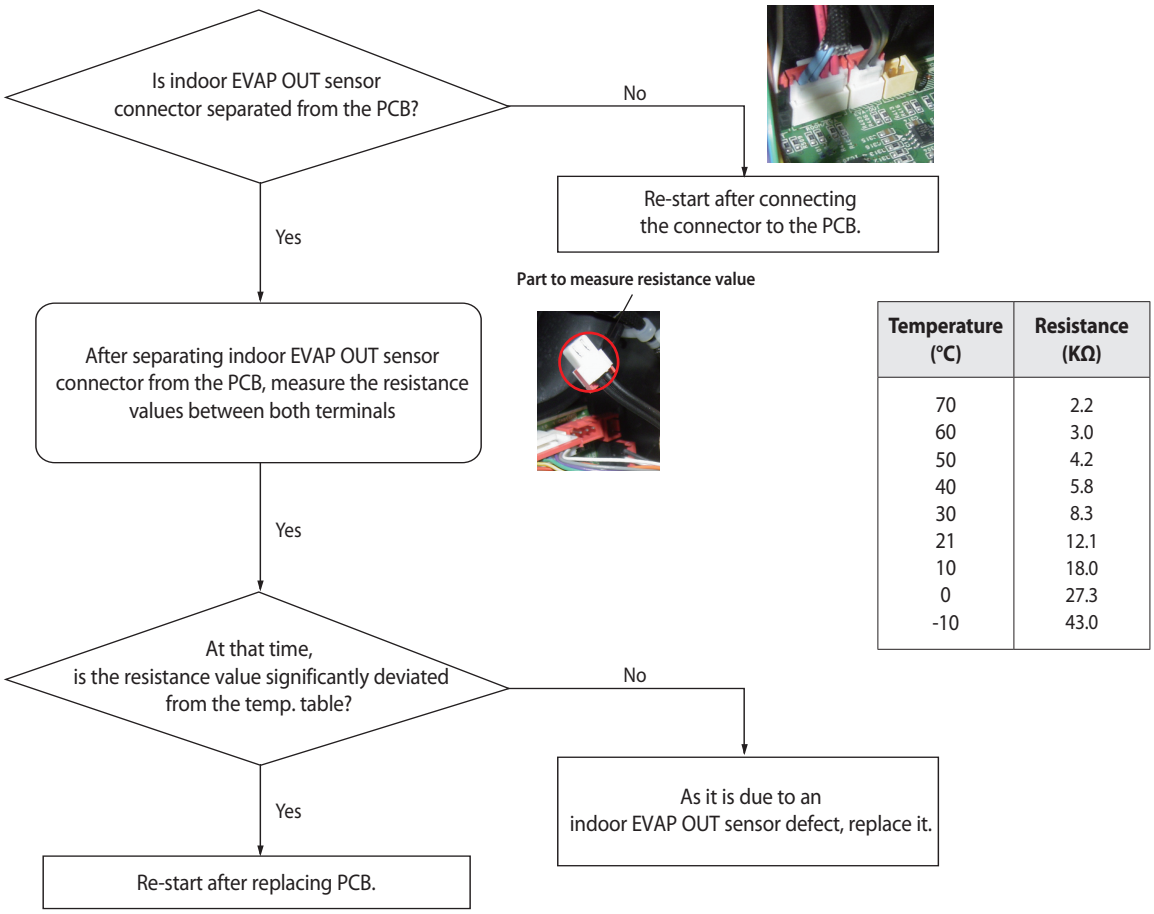


Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-4 Indoor EVAP OUT sensor Error (Open/Short)

Outdoor unit display	E 123 ↔ A xxx (xxx : The address of the error occurred indoor unit)
Indoor unit display	◑(Operation) ◑(Timer) ×(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• The EVAP out sensor of No. XXX indoor unit has defective OPEN/SHORT

1. How to check



Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-5 Indoor Heat Exchanger's EVAP IN sensor dislocation error

Outdoor unit display	E 128 ↔ A xxx (xxx : The address of the error occurred indoor unit)
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Indoor heat exchanger's EVAP IN piping sensor has been dislocated

1. How to diagnose
   1) During Cooling Operation

Tcond, out - Tair, out > 3°C	OK
Tair, in - Teva, out > 4°C	NO
Tair, in - Teva, out > 4°C	OK
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	Indoor heat exchanger's EVAP IN sensor dislocation error

   2) During heating operation

Average high pressure > 25kg/㎠	OK
Average low pressure > 8.5kg/㎠	OK
Tcond, out - Tair, out ≥ 3°C	OK
Tair, in - Teva, out ≥ 2°C	NO
Tcond, out - Tair, out < -2°C	OK
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	Indoor heat exchanger's EVAP IN sensor dislocation error

2. How to check
   Check if an Indoor heat exchanger's EVAP IN sensor has been dislocated then is correct after assembling.

4-3-6 Indoor Heat Exchanger's EVA OUT sensor dislocation error (Open/Short)

Outdoor unit display	E 129 ↔ A xxx (xxx : The address of the error occurred indoor unit)
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Indoor heat exchanger's EVA IN piping sensor has been dislocated

1. How to diagnose
   1) During Cooling Operation

Tcond, out - Tair, out > 3°C	OK
Tair, in - Teva, out > 4°C	NO
Tair, in - Teva, out > 4°C	OK
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	Indoor heat exchanger's EVA IN sensor dislocation error

   2) During Heating operation

Average high pressure > 25kg/㎠	OK
Average low pressure > 8.2kg/㎠	OK
Tcond, out - Tair, out ≥ 3°C	NO
Tair, in - Teva, out ≥ 2°C	NO
Tcond, out - Tair, out < -2°C	OK
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	Indoor heat exchanger's EVA IN sensor dislocation error

2. How to check
   Check if an Indoor heat exchanger's EVA OUT sensor has been dislocated then is correct after assembling.

4-3-7 Simultaneous Indoor Heat Exchanger's EVA IN, OUT sensor dislocation error (Open/Short)

1. How to diagnose
   1) During Cooling Operation

Tcond, out - Tair, out > 3°C	OK
Tair, in - Teva, out > 4°C	NO
Tair, in - Teva, out > 4°C	NO
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	Simultaneous indoor heat exchanger's EVA IN, OUT sensor dislocation error

   2) During Heating operation

Average high pressure > 25kg/㎠	OK
Average low pressure > 8.2kg/㎠	OK
Teva, out - Tair, out ≥ 3°C	NO
Tair, in - Teva, out ≥ 2°C	NO
Tcond, out - Tair, out < -2°C	OK
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	Simultaneous Indoor heat exchanger's EVA IN, OUT sensor dislocation error

2. How to check
   Check if an Indoor heat exchanger's EVA IN, OUT sensor has been dislocated then is correct after assembling.

4-3-8 Operational error of indoor Unit's Clean Fan (Open/Short)

Outdoor unit display	E 135 ↔ A xxx (x x x : The address of the error occurred indoor unit)
Indoor unit display	×(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• The operational error of the fan motor of No. XXX indor unit

1. How to diagnose
   Occurs when RPM values are not sent as feedback to MICOM at a PID control-type fan motor

2. How to check
   1) Check the HALL IC connector that carries out RPM value feedback
   2) If the operational capacitor is a PCB separation type, check the connection terminal
   3) Check the operation status of fan motor
   4) If there is no problem with the above checkup items, replace the PCB.

4-3-9 Breakdown of EEV (2nd)

1. How to diagnose
   Detect only on cooling operation. (No detection during heating operation.)
   During cooling operation, the temperature of the inlet or outlet ducts of heat exchanger is kept below 0˚C for more than 20 minutes without cessation

2. How to check
   1) Check if the wire of electronic expansion valve is correctly connected to the PCB of indoor unit.
   2) Check if the coil of an electronic expansion valve is correctly plugged into the main body.
   3) Check if there is any rust on the surface of the electronic expansion valve with naked eyes then check the resistance between each terminal to find any wire breaking or short circuit.
   4) Press the RESET KEY (K3) of the outdoor unit then see if the same error occurs.
      - In case of closure problem, operate the indoor unit in which the error has occurred.
      - In case of opening problem, please do not operate the indoor unit in which the error has occurred.
   5) If there is no problem with the above checkup items, replace the electronic expansion valve of the troubled indoor unit.
      - As an electronic expansion valve replacement is tricky work that requires collecting refrigerants in all systems, please check the above items before replacement.

4-3-10 Problem with EEV closure (2nd)

1. How to diagnose
   1) During Cooling operation(Each of the below conditions have to be met for at least 20 minutes.)

Tcond, out - Tair, out > 3℃	OK
Tair, in - Teva, out > 4℃	NO
Tair, in - Teva, out > 4℃	NO
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	Electrically operated valve closure breakdown

   2) During heating operation (must satisfy all conditions below)
   - When more than 2 indoor units are on Thermo On heating operation.
   - When average high pressure is over 18kg/cm^2
   - 5 minutes after finishing Safety Start
   - Keep Indoor units' T(Eva_In)<T(Room) +3˚C and T(Eva_Out)<T(Room) +3˚C condition for more than 5 minutes

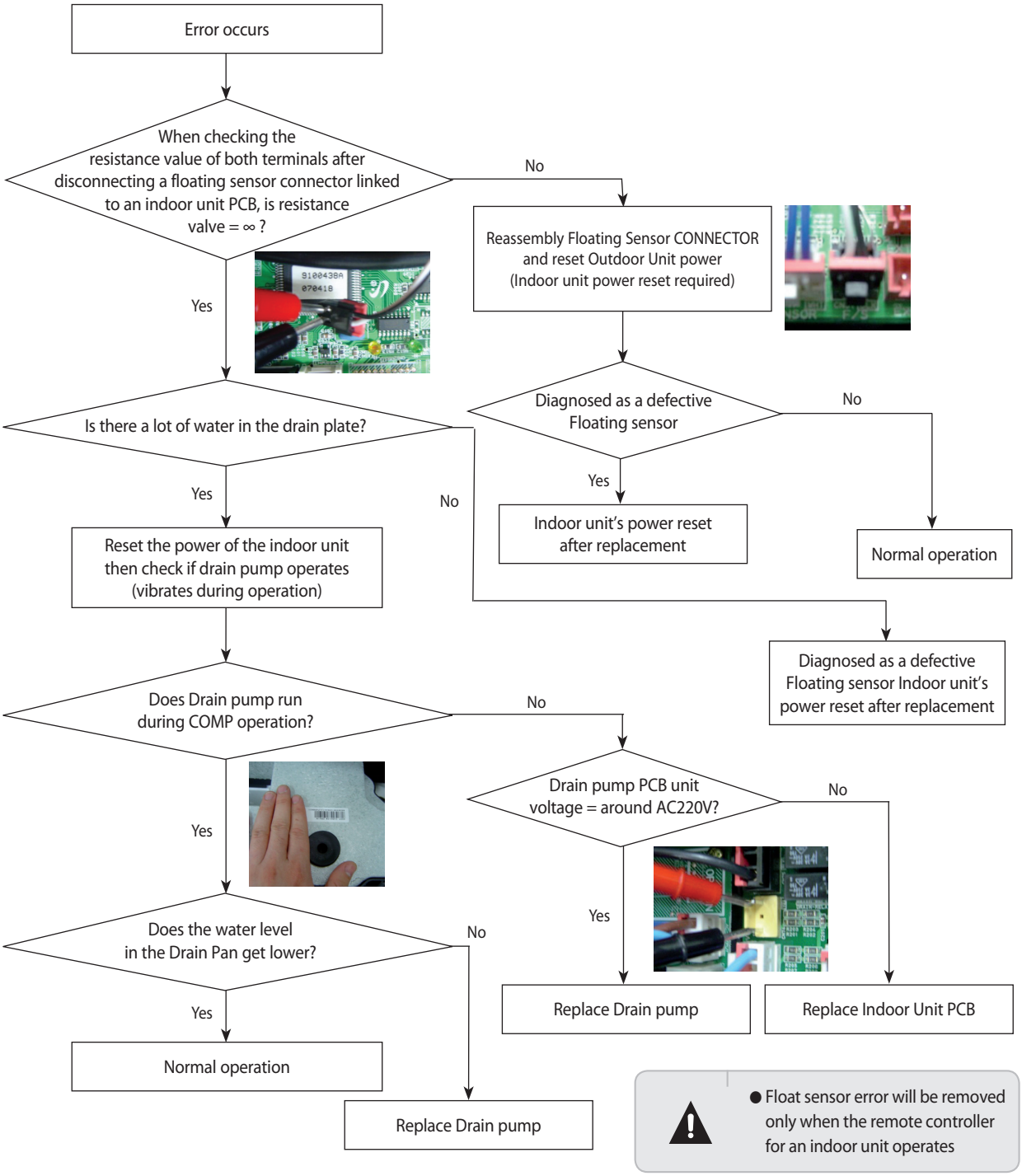
2. How to check
   1) Check if the wire of electronic expansion valve is correctly connected to the PCB of indoor unit.
   2) Check if the coil of electronic expansion valve is correctly plugged into the main body.
   3) Check if there is any rust on the surface of the electronic expansion valve with naked eye then check the resistance between each terminal to find any wire breaking or short circuit.
   4) Press the RESET KEY (K3) of the outdoor unit then see if the same error occurs.
      - In case of closure problem, operate the indoor unit in which the error has occurred.
      - In case of opening problem, please do not operate the indoor unit in which the error has occurred.
   5) If there is no problem with the above checkup items, replace the electronic expansion valve of the troubled indoor unit.
      - As electronic expansion valve replacement is tricky work that requires collecting refrigerants in all systems, please check the above items before replacement.

4-3-11 E153 : Detection of Floating Switch of Indoor Unit's Drain Pump

Outdoor unit display	E153 ↔ A xxx(xxx : The address of the error occurred indoor unit)
Indoor unit display	×(Operation) ×(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Due to the breakdown of a drain pump of the indoor unit, an increase in the water level in the drainage plate or defective detection sensor

✳ To release E153 error, you must reset the power of the indoor unit.

1. How to check



4-3-12 The operational error of Indoor Unit's Fan Motor

Outdoor unit display	E 154 ↔ A xxx(x x x : The address of the error occurred indoor unit)
Indoor unit display	× (Operation) × (Timer) ◑(Fan) × (Filter) × (Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• The operational error of the fan motor of No. XXX indoor unit

1. How to diagnose
   1) Occurs when RPM valve fails to feedback to MICOM at a PID control-type fan motor

2. How to check
   1) Check HALL IC connector that carries out feedback of RPM value.
   2) If a fan motor operation capacitor is a PCB separating type, check the connection terminal.
   3) Check the operational status of the fan motor.
   4) If there is no problem with the above checkup items, replace the PCB.

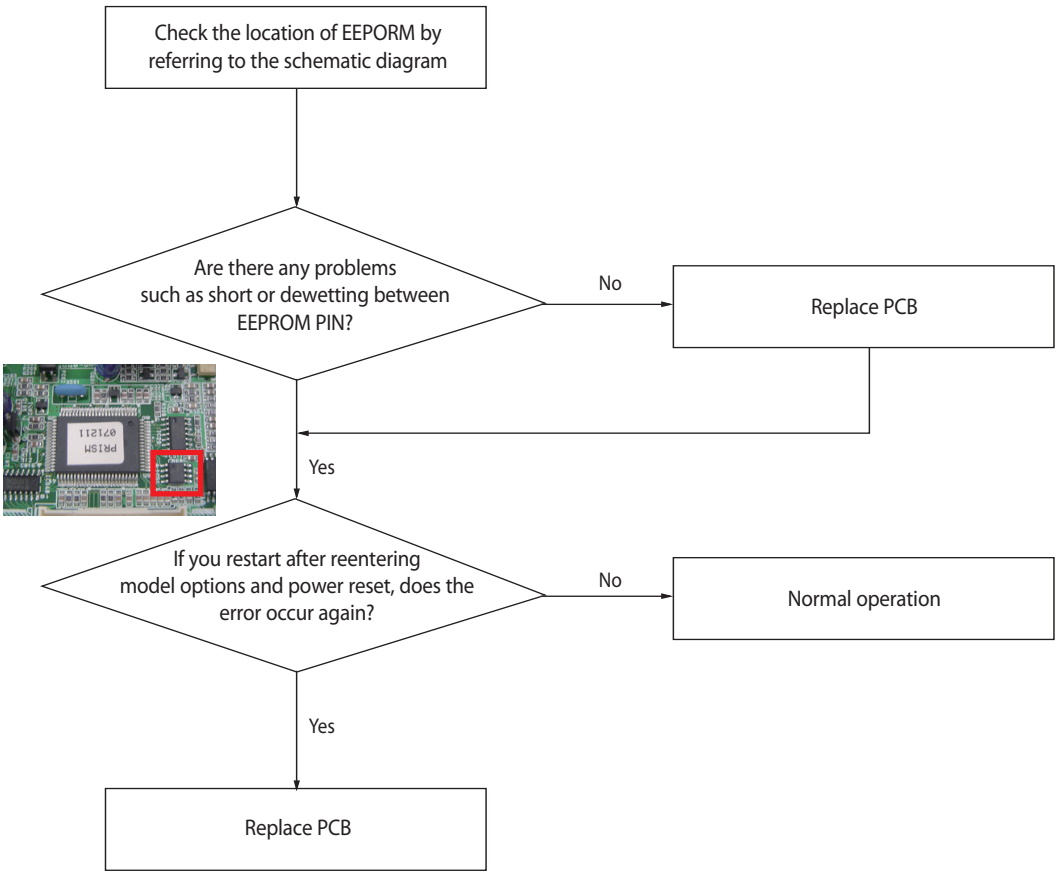
4-3-13 Mixed operation Error (Only applicable to Heat Pump Model/Not to HR model)

- Mixed operation error is applicable only to Heat Pump Model and not to HR model.
- Mixed operation error is not due to a product problem but is displayed when the operational mode input in an indoor unit is different from current operational status (other indoor unit's operational mode).
- Check the operational mode of outdoor unit or other indoor unit then re-enter or stop the operational mode of the relevant unit.
- If it is necessary to apply a different operational mode to an indoor unit from others, please stop other indoor units then operate the indoor unit.

4-3-14 EEPROM error

Outdoor unit display	E 162
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Communication failure between EEPROM and MICOM
Cause of problem	• PCB replacement due to defective EEPROM

1. How to check



4-3-15 Option error of the Remote Controller for an Indoor Unit

Outdoor unit display	E 163
Indoor unit display	◑(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ◑(Defrost)
Criteria	• Display number type of indoor unit – E163 occurs, Lamp type – all lamps flash
Cause of problem	• Missed or erroneous input of remote controller options

● Check relevant remote controller options for each model then enter correct options

4-3-16 Error due to confused use of Fahrenheit and Celsius

Outdoor unit display	E 170
Indoor unit display	× (Operation) ◑(Timer) ◑(Fan) ◑(Filter) × (Defrost)
Criteria	• Display number type of indoor unit – E170 occurs, Lamp type – all lamps flash • Occurs in an indoor unit with Celsius setting
Cause of problem	• Missed input of remote controller options

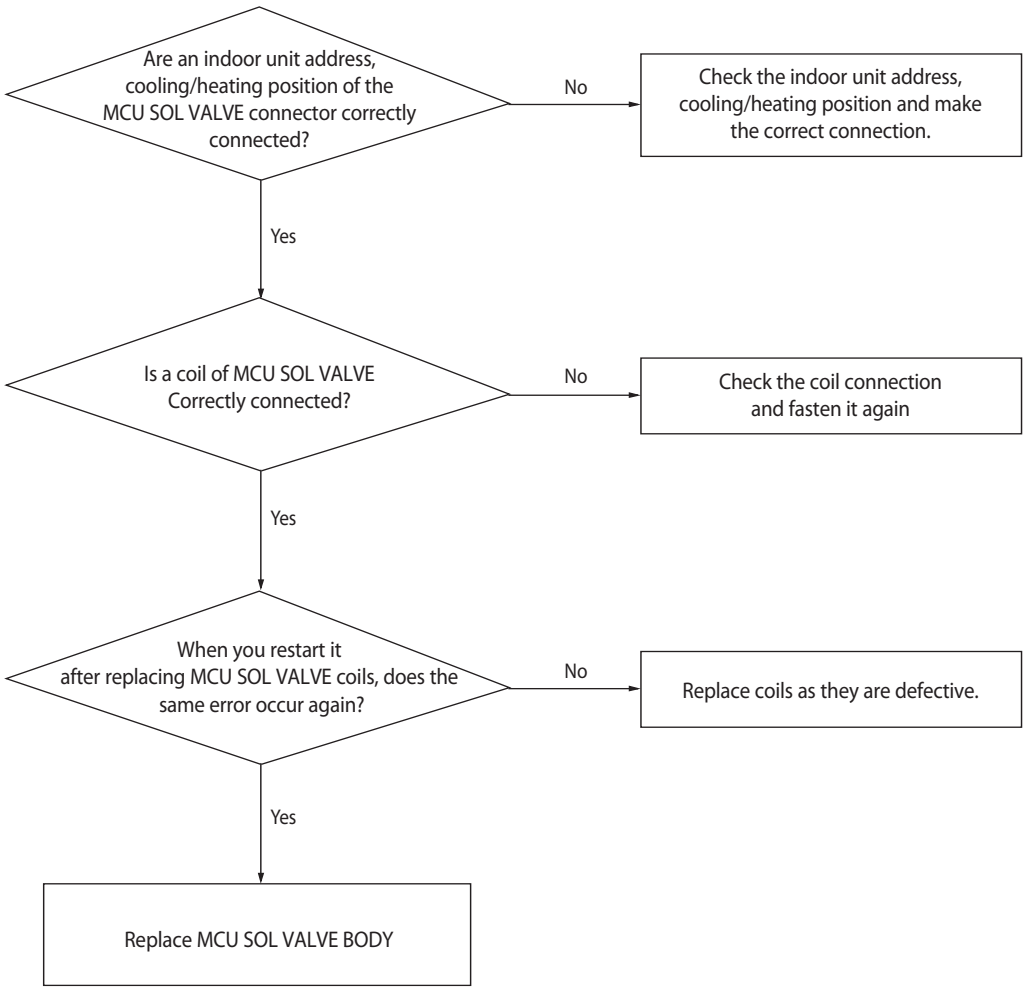
● Check relevant remote controller options for each model then enter correct options

● As this happens only in a Celsius setting model, it is necessary to reenter option codes for error-free models in a region where Celsius is used.

4-3-17 Simultaneous opening of Cooling/heating MCU SOL Valves 1st/2nd

- During the first detection, as the system restarts after making an automatic stop to check a problem with the system
- During the second detection, please refer to the following check-up methods.

1. How to check



4-3-18 Error due to incorrect Indoor Unit Power/Communication Cable Connection

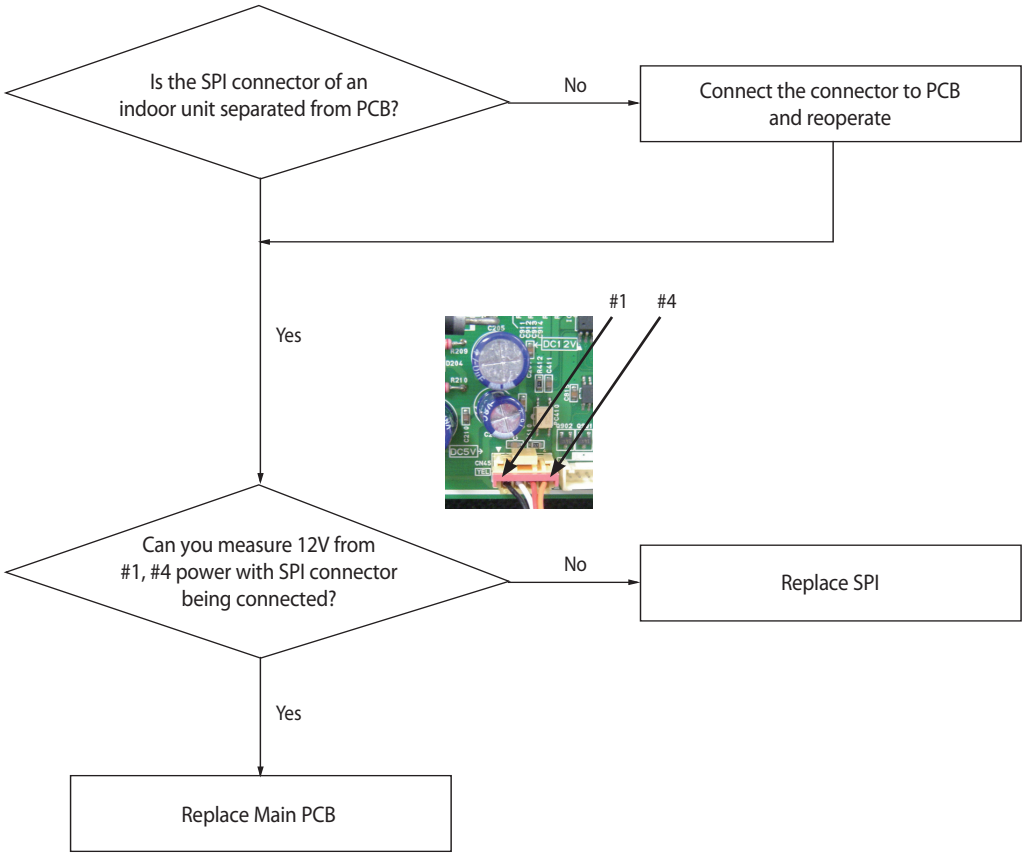
Outdoor unit display	E 185
Indoor unit display	E 185 (wall mount type)
Criteria	• Check for Power input(220V) for the Terminal block(F1/F2).
Cause of problem	• Apply power (220V) to the terminal of the indoor unit communication block (F1/F2)

● Check for disconnected line after turning off the Main power.

4-3-19 SPI Feedback Error

Outdoor unit display	E 186
Indoor unit display	◑(Operation) ◑(Timer) ×(Fan) ◑(Filter) ×(Defrost)
Criteria	• Check if the output of SPI Feedback is 12V
Cause of problem	• SPI defect

1. How to check



4-3-20 Outdoor Unit Pipe Test Error

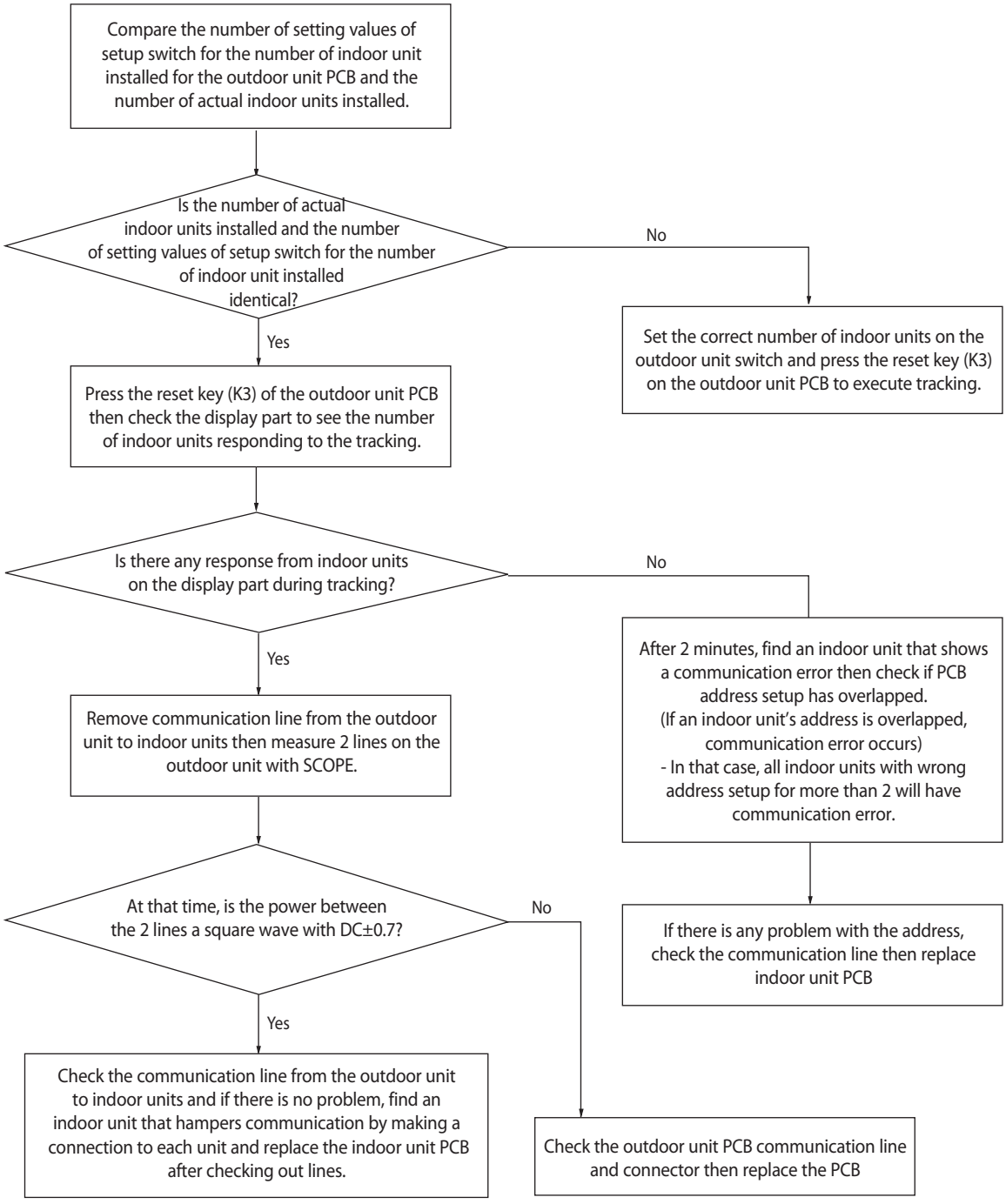
1. Judgement process

   ● Check if the indoor unit connected to the MCU has the same ADDRESS as the set ADDRESS on the MCU.
   ● Check if the indoor unit ON/OFF switch on the MCU port is set to ON.

4-3-21 Communication error between Indoor and Outdoor units during Tracking

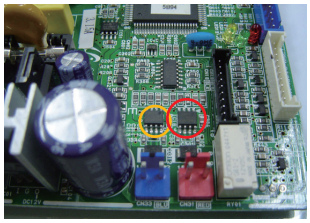
Outdoor unit display	E201
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Communication error between indoor and outdoor units
Cause of problem	• Refer the below

1. How to check

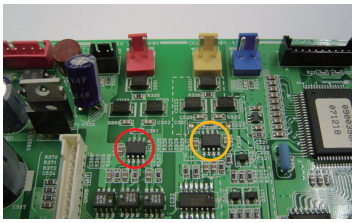


※ Important things to check before replacing PCB for Communication error

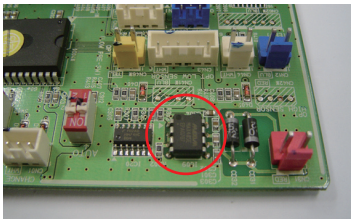
1. Find a communication IC around a communication terminal.
   - ● Indoor Unit
     - The upper part of the red connector - communication IC for communication between indoor and outdoor units
     - The upper part of the blue connector – wired remote controller communication IC
   - ● Outdoor Unit
     - If there is a module communication as in PLUSII, PLUSII : the upper part of the red connector: communication IC for communication between indoor and outdoor units
     - If there is a module communication as in PLUSII, PLUSII : the upper part of the yellow connector of each unit: communication IC for communication among outdoor units
     - Other outdoor units – the upper part of the communication connector : communication IC for communication between indoor and outdoor units



Indoor unit

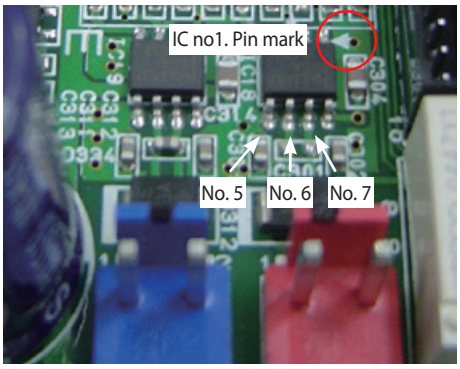


Module-type outdoor unit

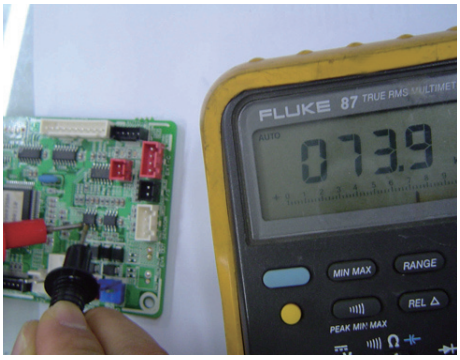


Independent-type outdoor unit

2. Measure the resistance of communication IC.
   - ● How to measure : measure resistance between no. 5 – no.6 Pin
     measure resistance between no. 5 – no.7 Pin



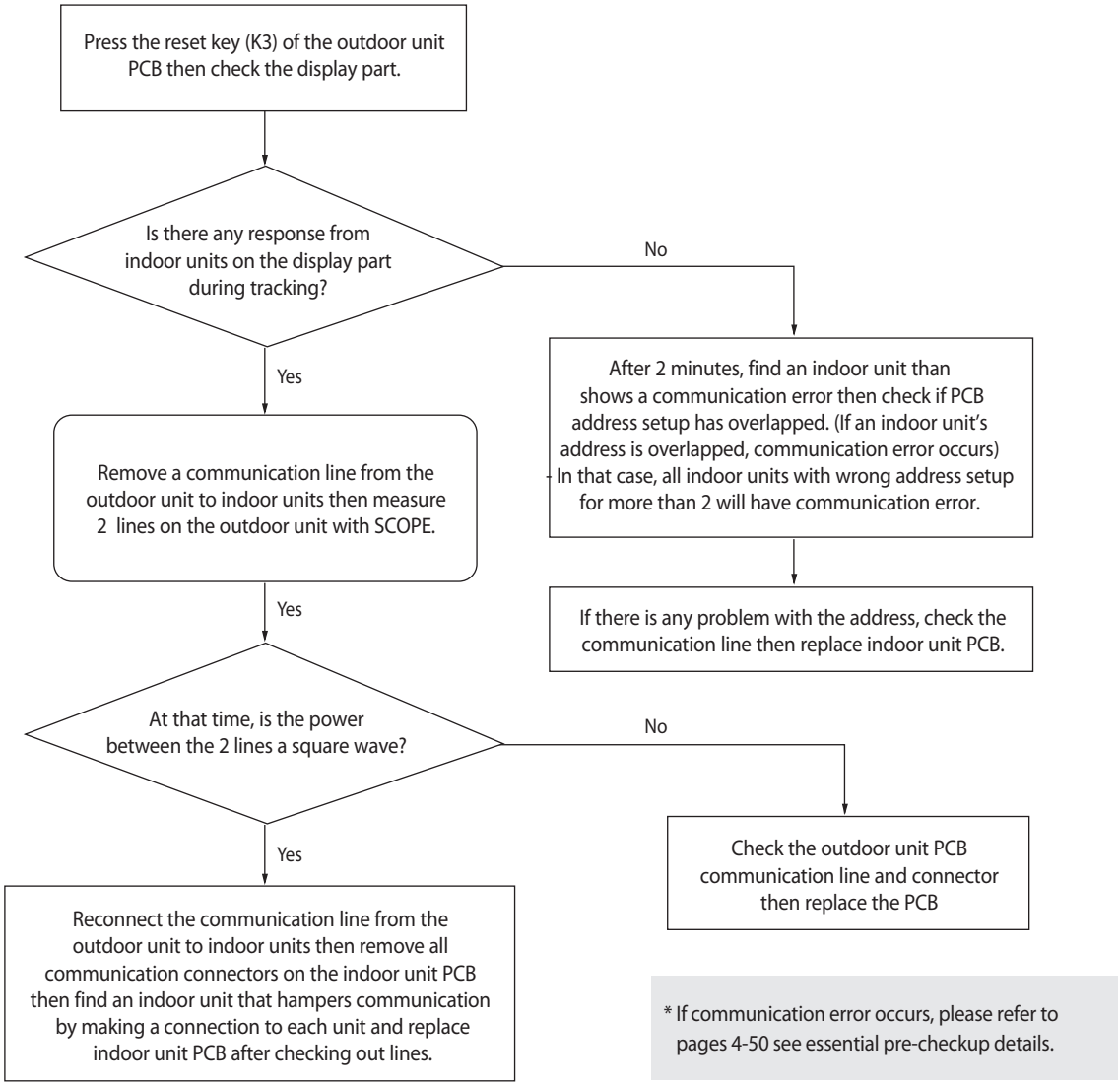
3. Diagnosis of communication IC's status using the measured resistance.
   - ● Diagnosed as normal
     - Each resistance value should be between several tens kΩ-several hundreds kΩ unit
     - The difference between both resistances should be within several kΩ
   - ● Diagnosed as defective
     - One or both has low resistance values around several tens Ω
     - One or both are open.

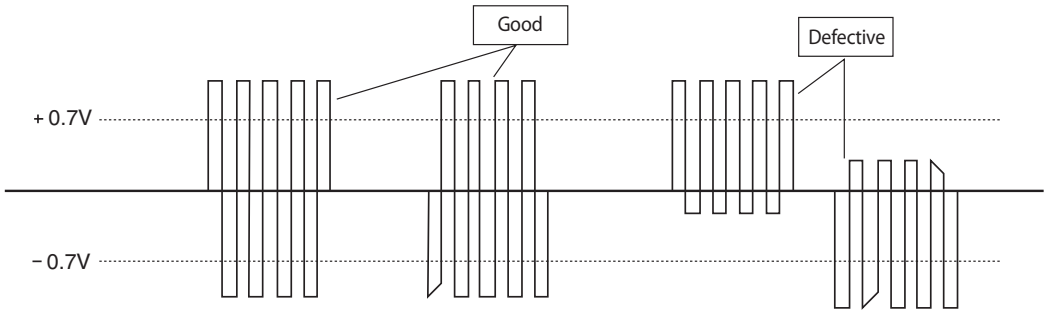


4-3-22 Communication error between Indoor & Outdoor units after Completing Tracking

Outdoor unit display	E202
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• When the communication between indoor/outdoor units cut-off for 2 minutes (all chambers fail to receive)
Cause of problem	• Communication error between indoor/outdoor units and/or the erroneous setup switch setting for the number of indoor units installed.

1. How to check

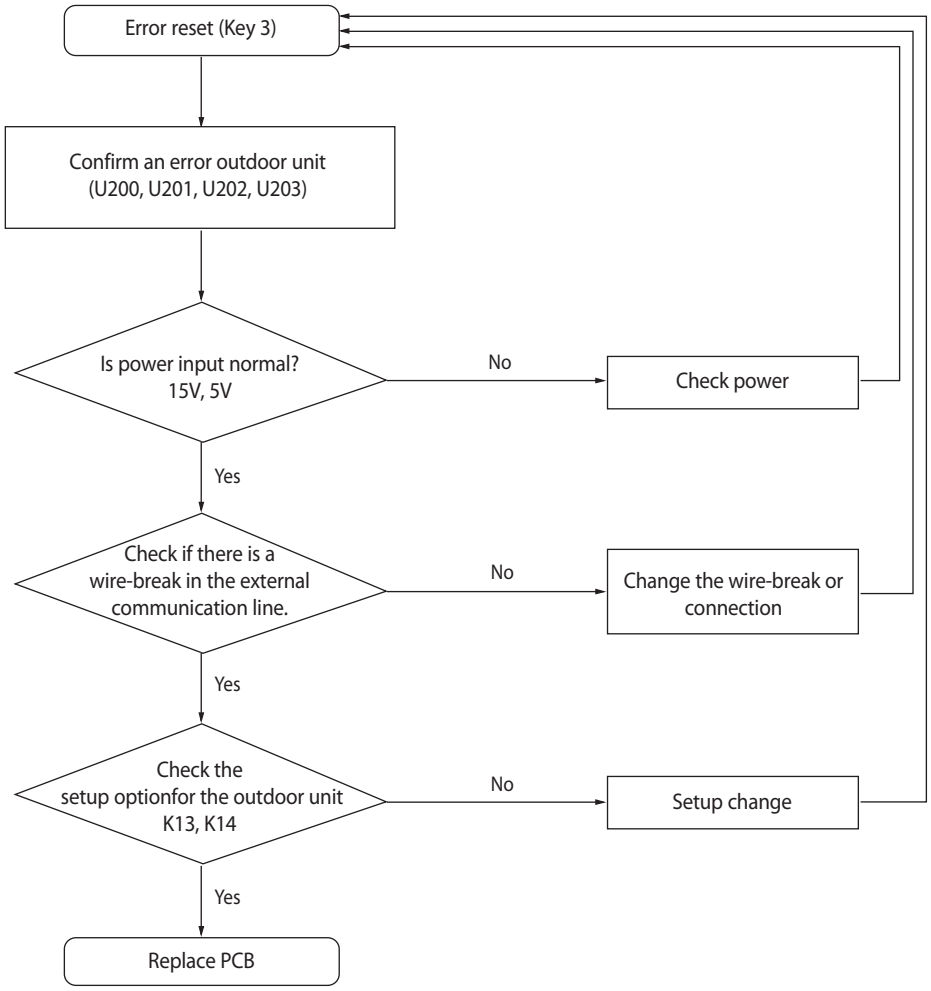




4-3-23 Communication error between Main and Sub Micoms of an Outdoor unit or among Outdoor Units

Outdoor unit display	E203 ↔ A xxx (x x x : The address of the error occurred indoor unit)
Indoor unit display	–
Criteria	• Refer to the diagnosis method below
Cause of problem	• Communication error between outdoor units

1. How to check

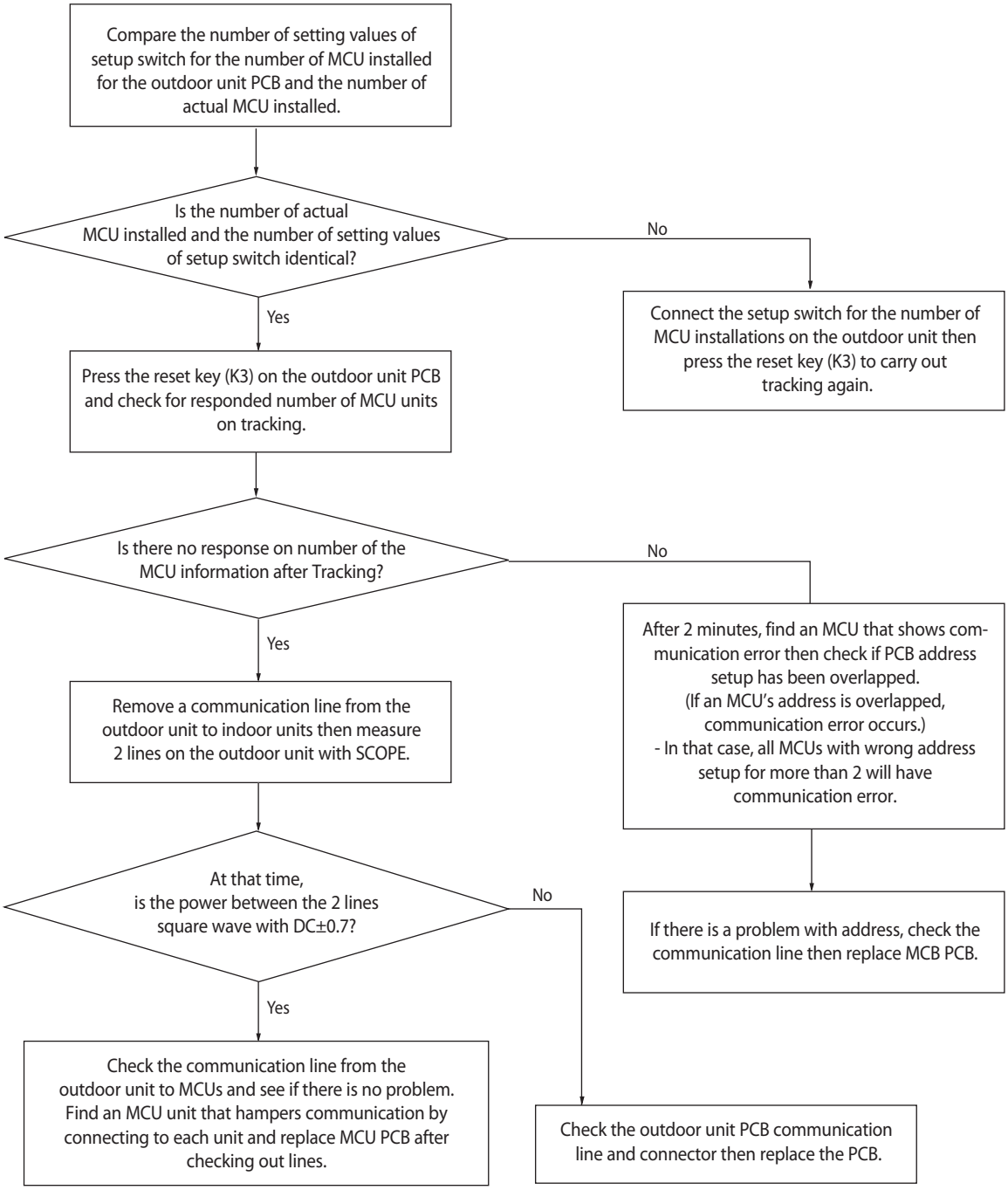


* If communication error occurs, please refer to pages 4-50 see essential pre-checkup details.

4-3-24 Communication error between MCU and Outdoor units

Outdoor unit display	E204
Indoor unit display	–
Criteria	• Communication error between MCU and outdoor units
Cause of problem	• Refer below

1. How to check

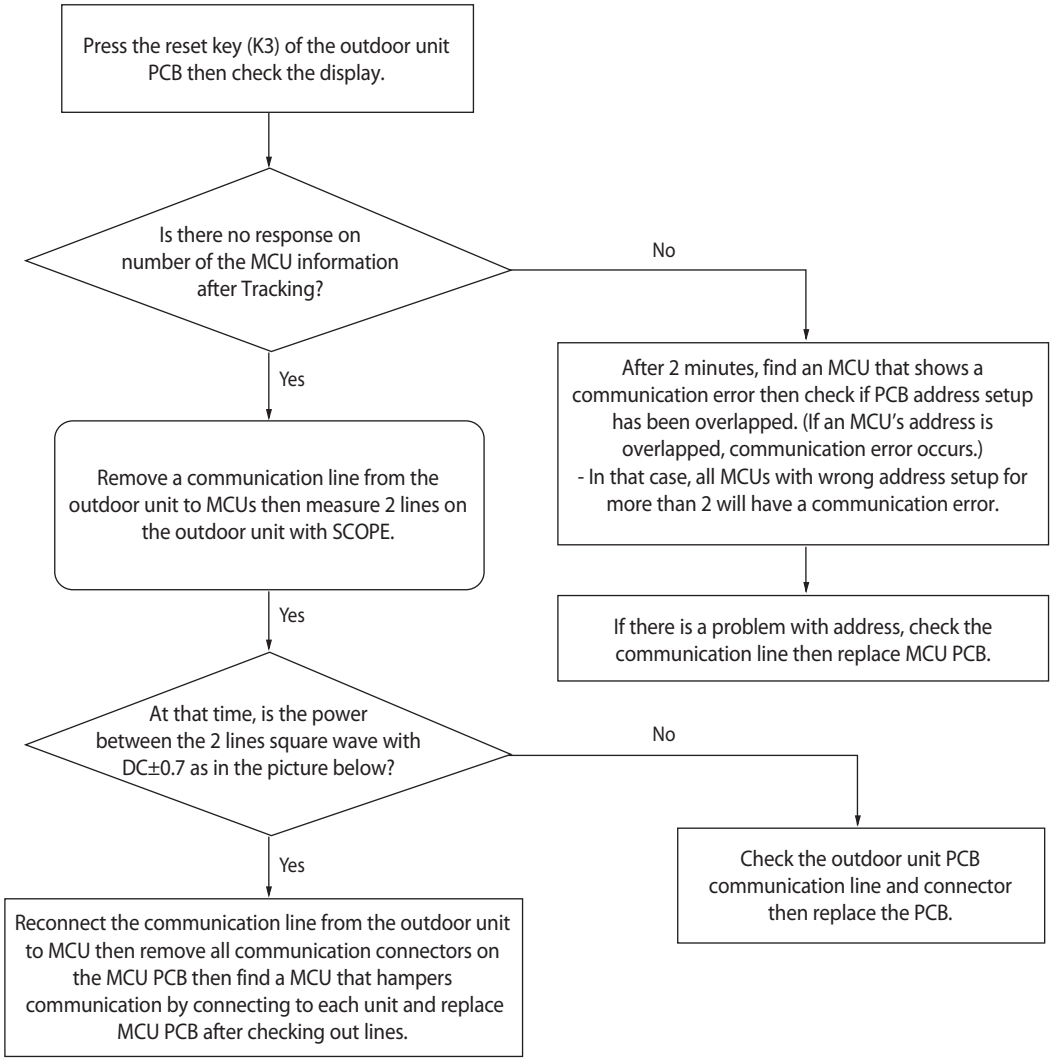


* If communication error occurs, please refer to pages 4-50 see essential pre-checkup details.

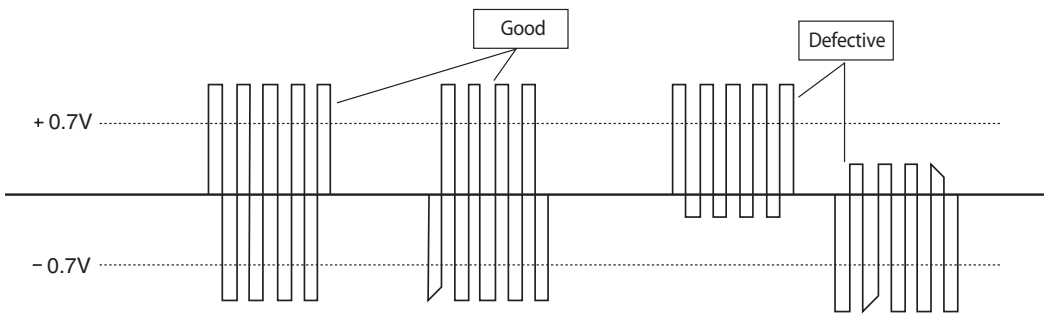
4-3-25 Communication error between MCU and Outdoor units after Completing Tracking

Outdoor unit display	E210
Indoor unit display	–
Criteria	• When the communication between indoor/outdoor units cut-off for 2 minutes (all chambers fail to receive)
Cause of problem	• Communication error between indoor/outdoor units and/or the erroneous setup switch setting for the number of indoor units installed.

1. How to check



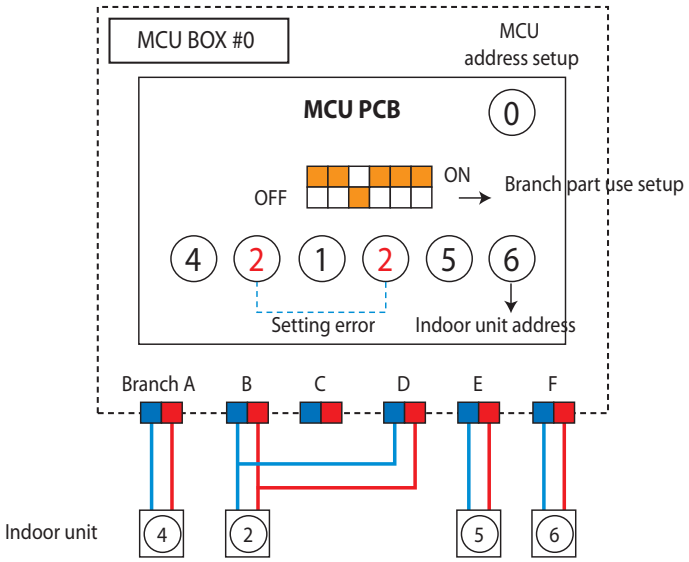
* If communication error occurs, please refer to pages 4-50 see essential pre-checkup details.



4-3-26 MCU branch part setup error – inconsecutive connection with the use of 2 branch parts

Outdoor unit display	E211
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• When 2 branch parts are used for one indoor unit without connecting them consecutively.
Cause of problem	• Branch part assembly error

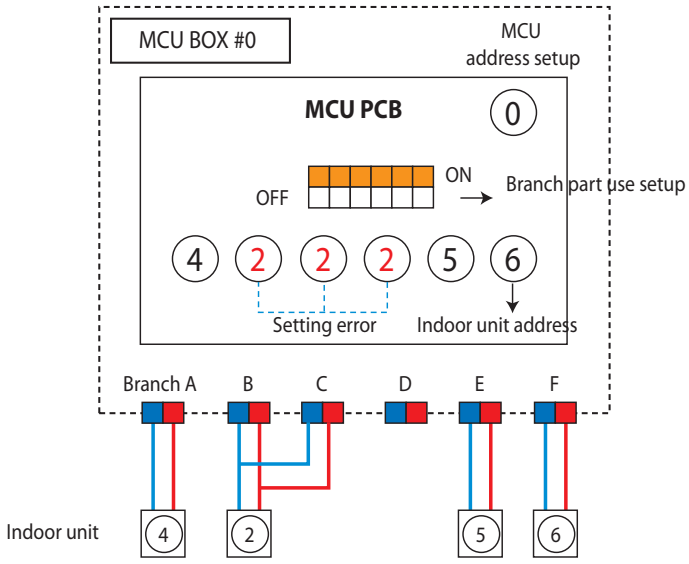
1. How to check
   Find an MCU that is composed as the following picture to carry out assembly of branch part again. After completing the re-setting, press K3 button on the button to reset or turn it off to restart.



4-3-27 MCU branch part setup error – Repeated setup for the same address over 3 times

Outdoor unit display	E212
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• The same indoor unit address was setup more than 3 times in MCU
Cause of problem	• MCU indoor unit address setting error

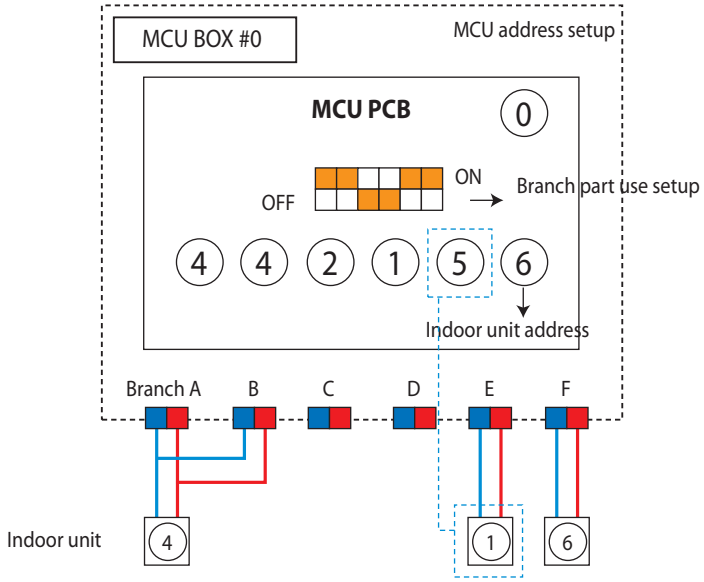
1. How to check
   Find an MCU that is composed as the following picture to carry out assembly of branch part again. After completing the re-setting, press K3 button on the button to reset or turn it off to restart.



4-3-28 MCU branch part setup error – non-installed address setup

Outdoor unit display	E213
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• If there is an indoor unit that is not installed among MCU registered indoor units
Cause of problem	• Indoor unit, with the assigned address on MCU, not installed.

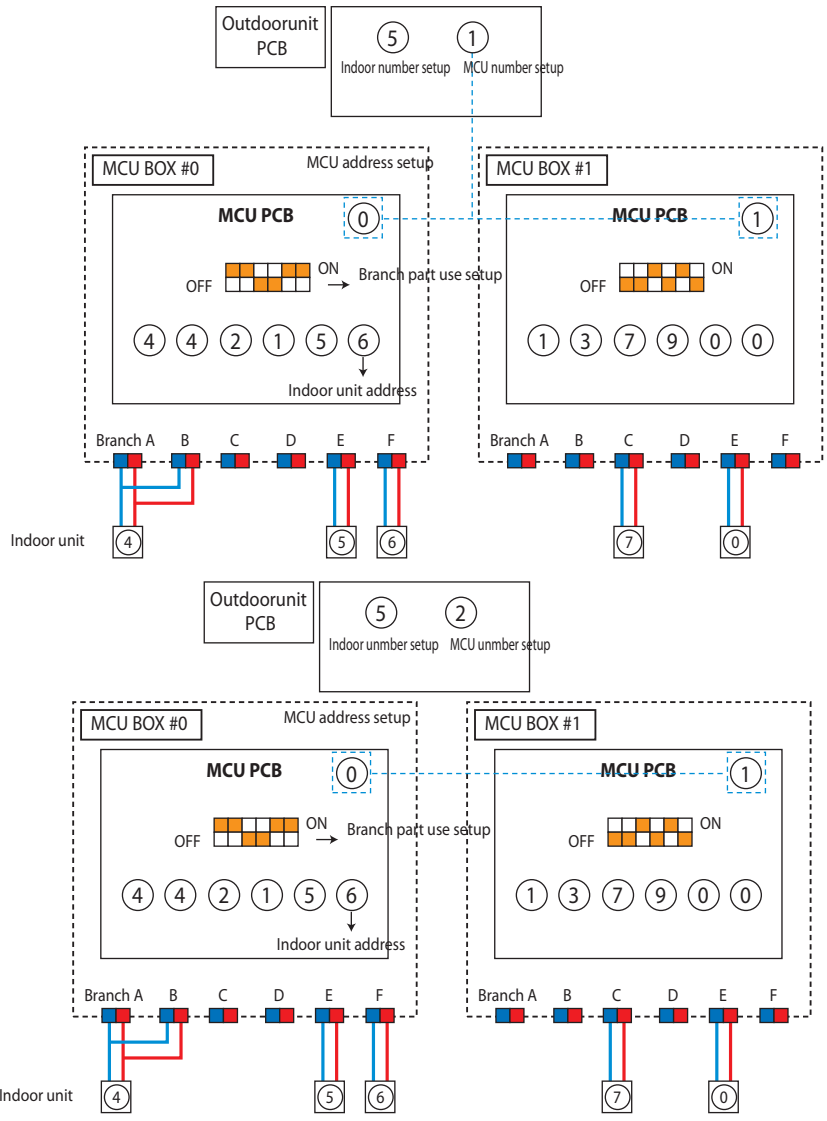
1. How to check
   Find an MCU that is composed as the following picture to carry out assembly of branch part again. After completing the re-setting, press K3 button on the button to reset or turn it off to restart.



4-3-29 MCU branch part setup error – Number of Multiple MCUs setup error

Outdoor unit display	E2 14
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Occurs when there is erroneous setup for the number of MCU for an outdoor unit • Occurs when more than 2 MCUs are connected for the same address
Cause of problem	• Wrong MCU setting and repeated address when setting two or more MCU

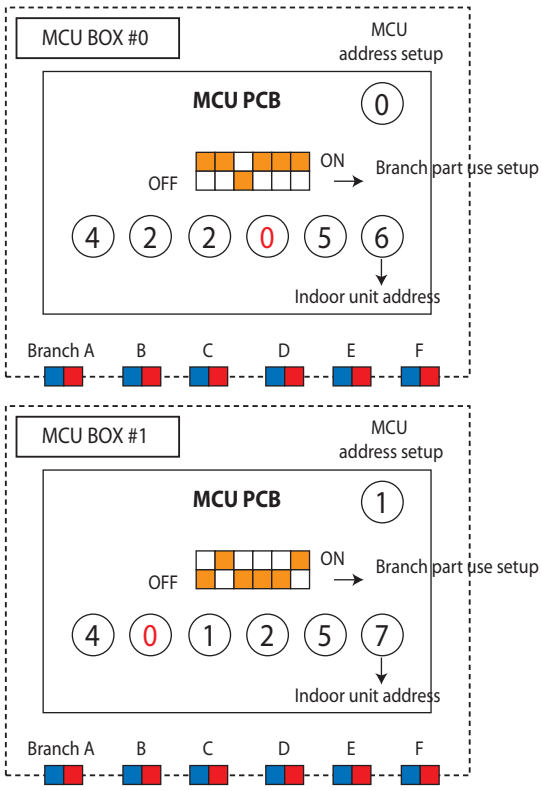
1. How to check
   Check the setup switch for the number of MCU on the outdoor unit
   Check if there is any overlapping setup switch for each MCU
   After completing resetting, press K3 to reset or turn off to restart.



4-3-30 MCU branch part setup error – Overlapping Indoor unit Address setup

Outdoor unit display	E2 15
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Occurs when an indoor unit address setup switch in MCU has been overlapped
Cause of problem	• Repeated indoor unit address

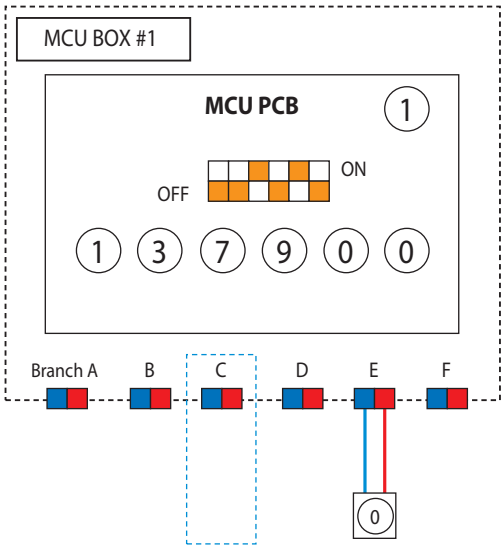
1. How to check
   Check the setup switch for the number of indoor units in MCU
   After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.



4-3-31 MCU branch part setup error – Set as being used without connection to an Indoor unit

Outdoor unit display	E2 16
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Occurs when MCU PIPE is set as being used, yet not connected to an indoor unit
Cause of problem	• Pipe is not installed to the indoor unit with assigned address on MCU

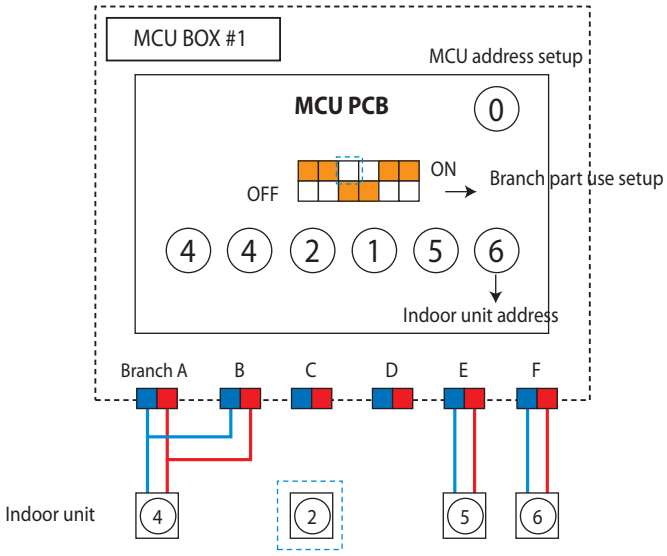
1. How to check
   Adjust the Dip switch that sets up the use of MCU branch part to 'Not-Used'. After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.



4-3-32 MCU branch part setup error – Connect an Indoor unit to a branch part not being used

Outdoor unit display	E2 17
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Occurs when MCU PIPE is turned off, yet an indoor unit is registered
Cause of problem	• Indoor unit connection to the unused branch part

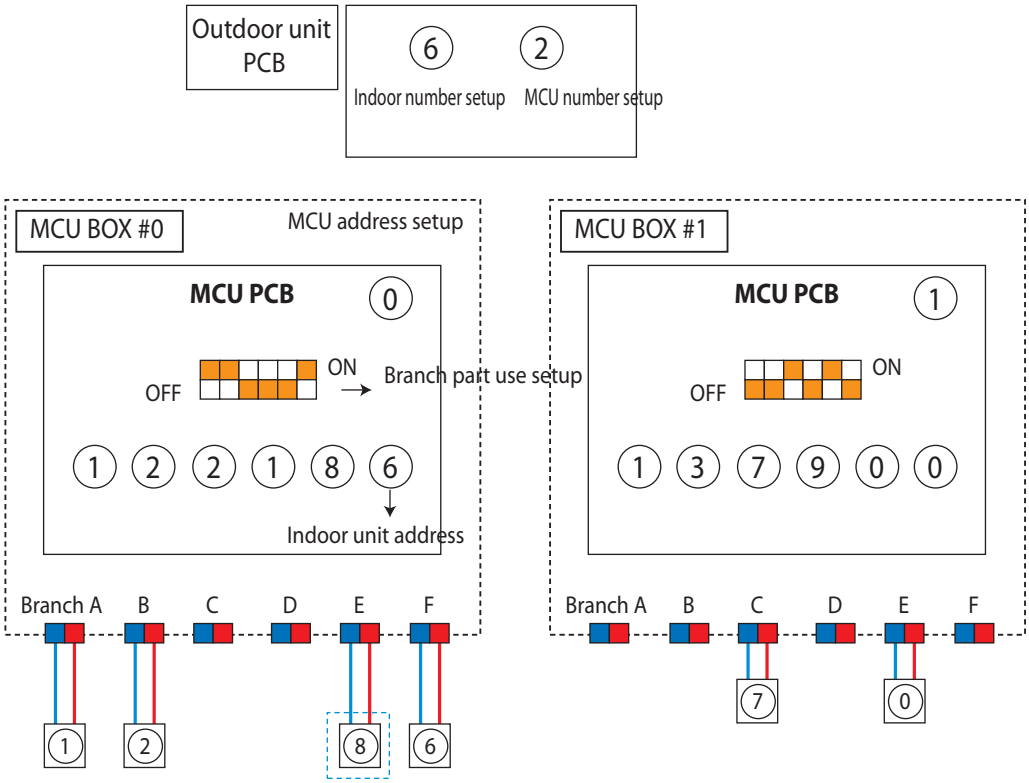
1. How to check
   Check the actual use of the branch part. If it is used, turn on the Dip switch for branch part setup. After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.



4-3-33 MCU branch part setup error – Connect more Indoor units than what is actually set up in MCU

Outdoor unit display	E2 18
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Occurs when the number of indoor units installed exceeds that registered in MCU
Cause of problem	• Number of indoor units exceeds number of indoor units entered on MCU setting

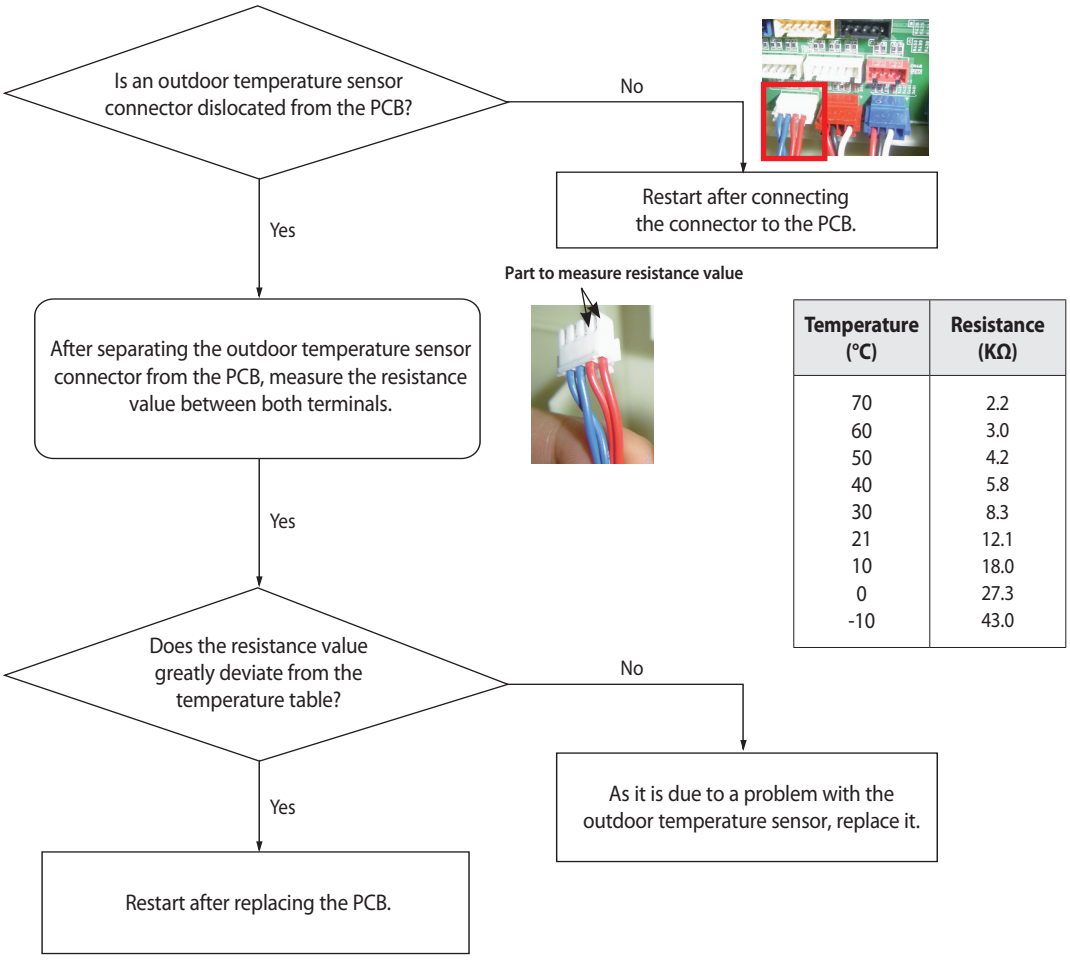
1. How to check
   Check the number of indoor units connected to MCU then readjust the switch for the number of units
   After completing resetting, press the outdoor unit's K3 button to reset or turn off to restart.



4-3-34 Outdoor Temperature Sensor error

Outdoor unit display	E221
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Outdoor temperature sensor OPEN/SHORT defective

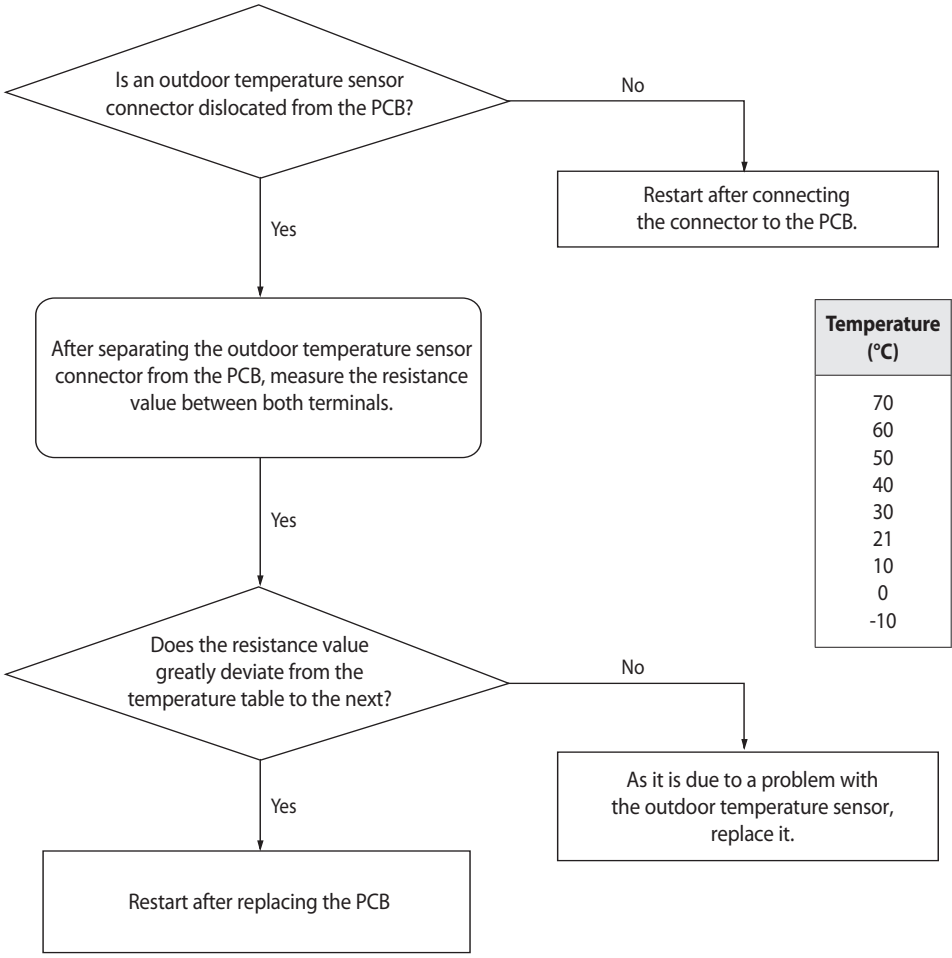
1. How to check



Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-35 Outdoor Temperature dislocation error

1. How to check

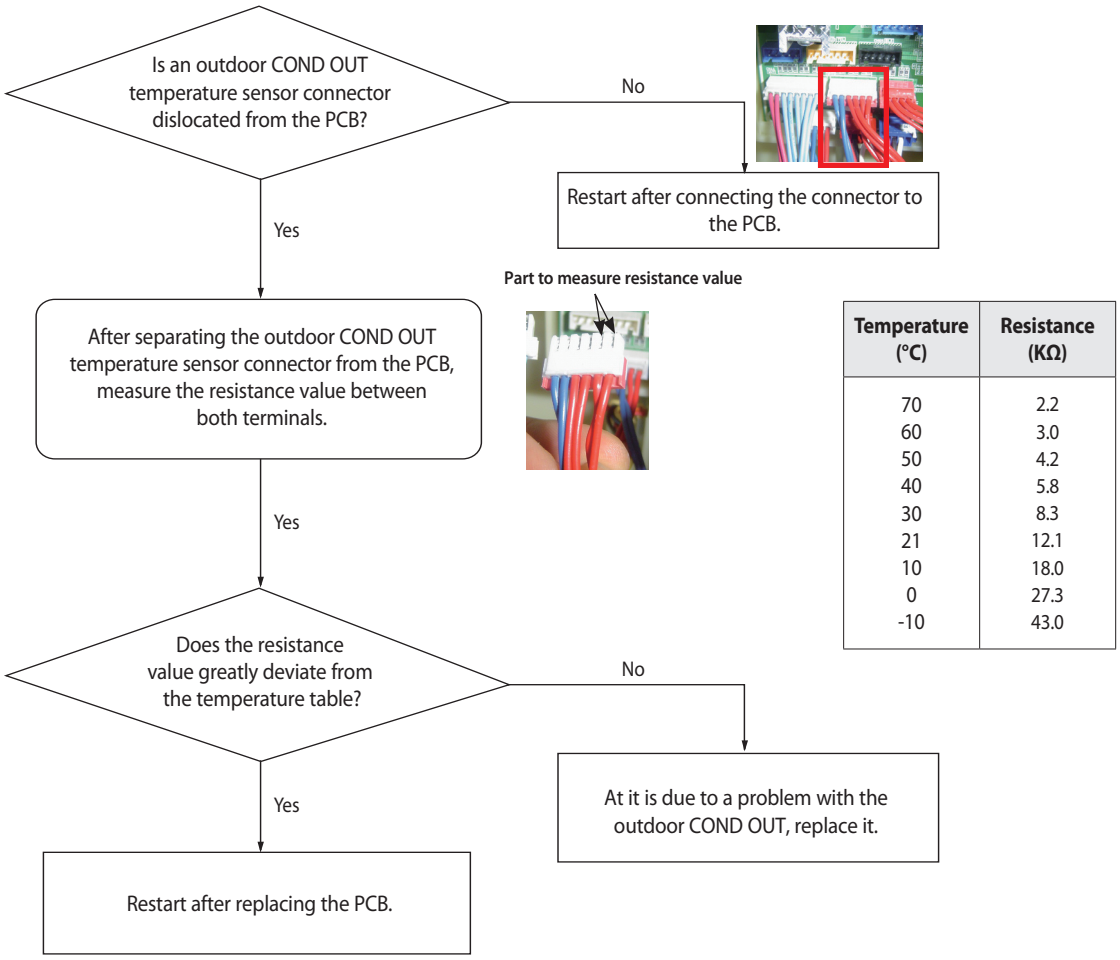


Temperature (℃)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-36 COND OUT Temperature Sensor error (Open/Short)

Outdoor unit display	E231
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

1. How to check



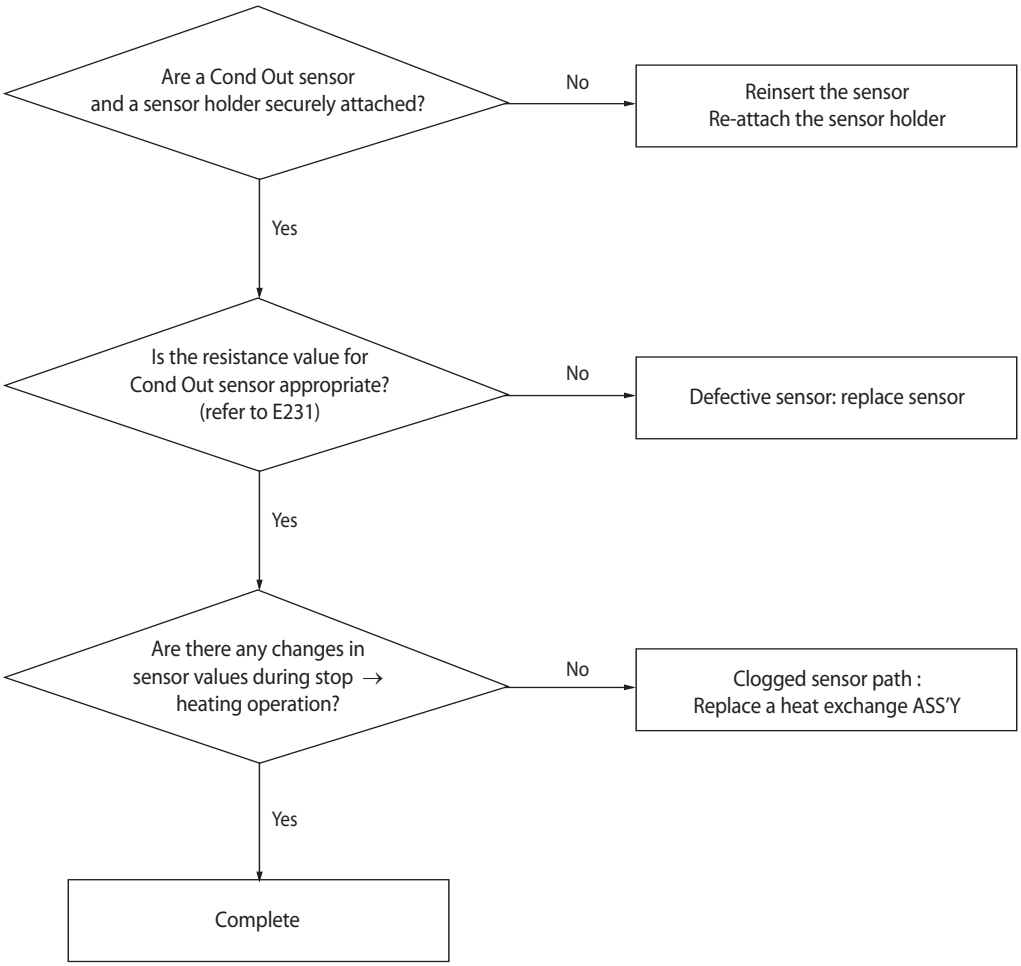
Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-37 Outdoor COND OUT Sensor dislocation error

1. How to diagnose
   1) During Cooling operation, there will be no detection
   2) During Heating operation(Each of the below conditions have to be met for at least 20 minutes.)

Average high pressure > 25kg/㎠	OK
Average low pressure > 8.5kg/㎠	OK
Tcond, out - Tair, out ≥ 3℃	OK
Tair, in - Teva, out ≥ 2℃	OK
Tcond, out - Tair, out < -2℃	NO
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	Outdoor Cond Out sensor dislocation error

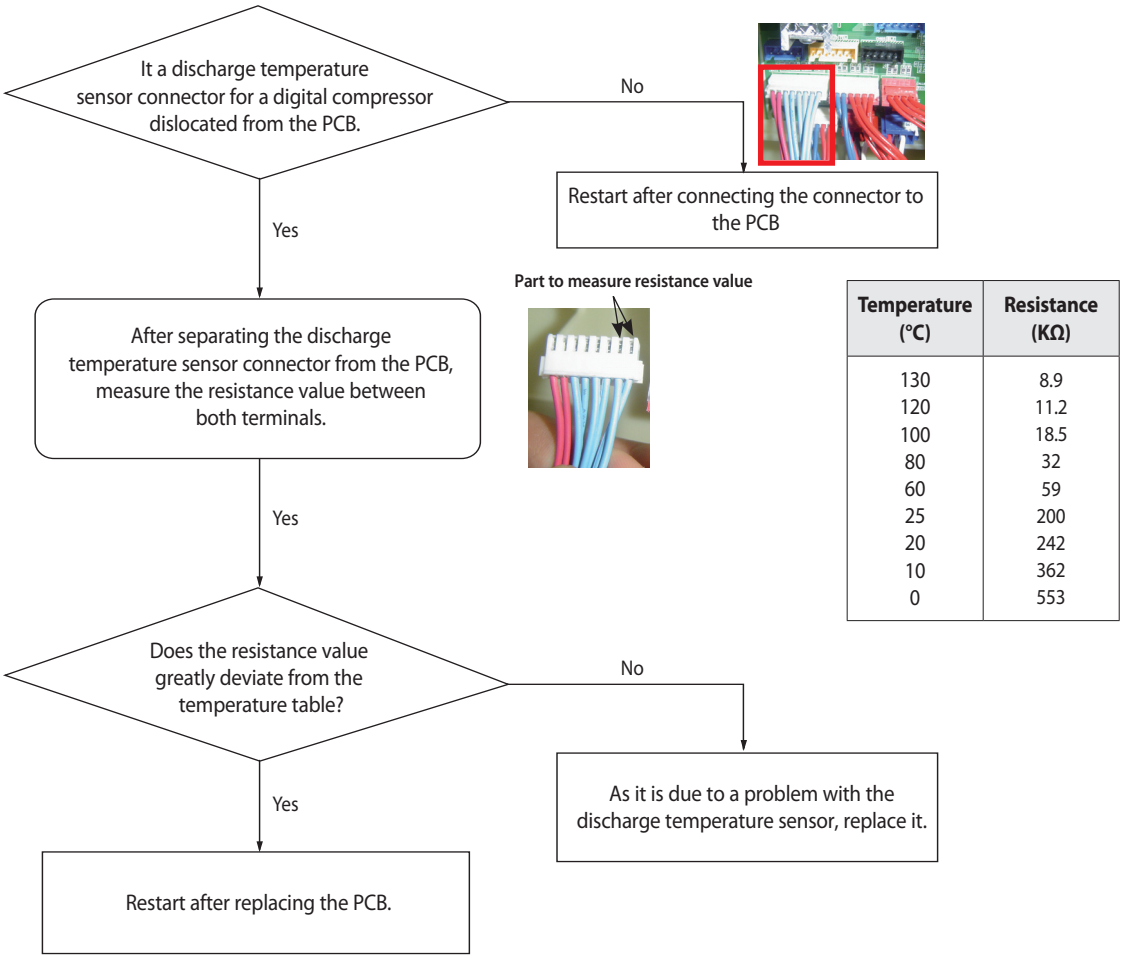
1. How to check



4-3-38 Discharge Temperature Sensor error for a digital Compressor (Open/Short)

Outdoor unit display	E251
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Digital compressor's discharge temperature sensor OPEN/SHORT defective

1. How to check

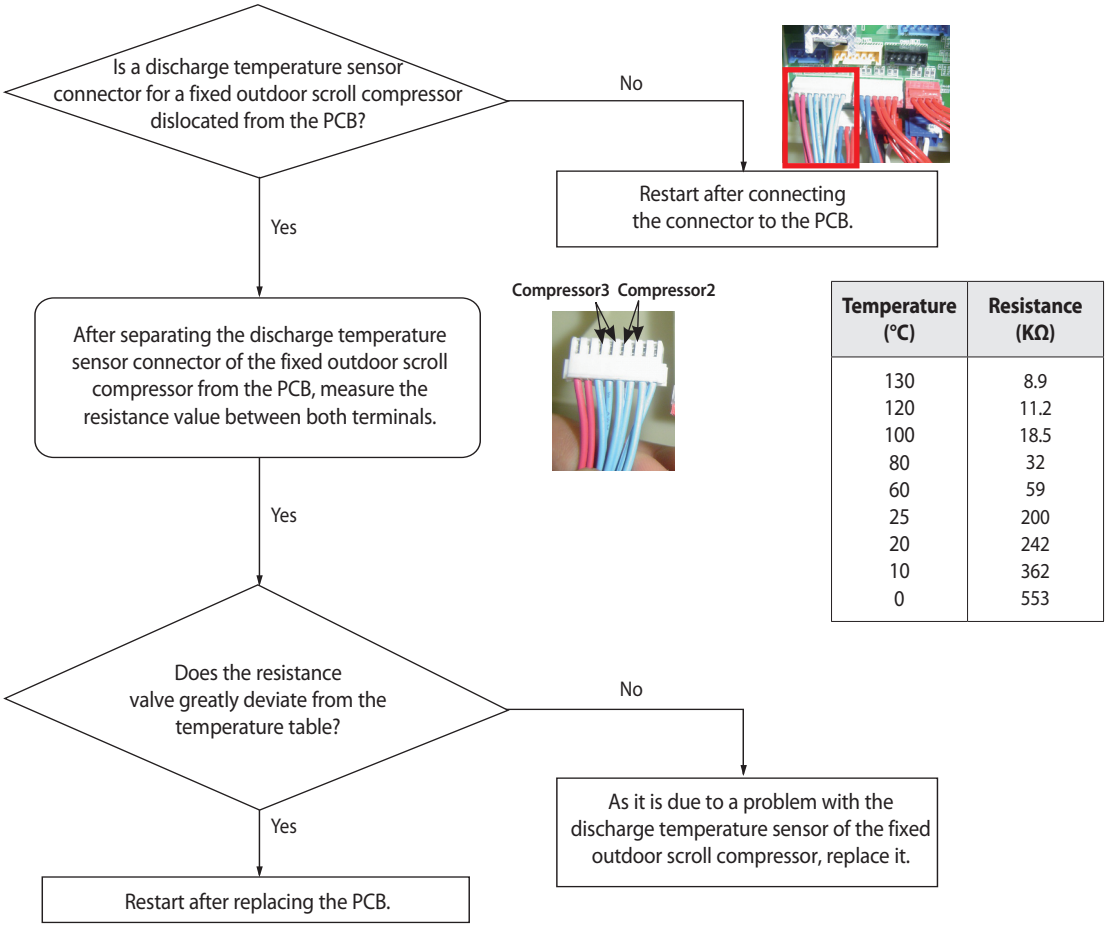


Temperature (°C)	Resistance (KΩ)
130	8.9
120	11.2
100	18.5
80	32
60	59
25	200
20	242
10	362
0	553

4-3-39 Discharge Temperature Sensor error for a fixed scroll Compressor (Open/Short)

Outdoor unit display	E257, E258 (Compressor 2, Compressor 3)
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Fixed scroll compressor's discharge temperature sensor OPEN/SHORT defective

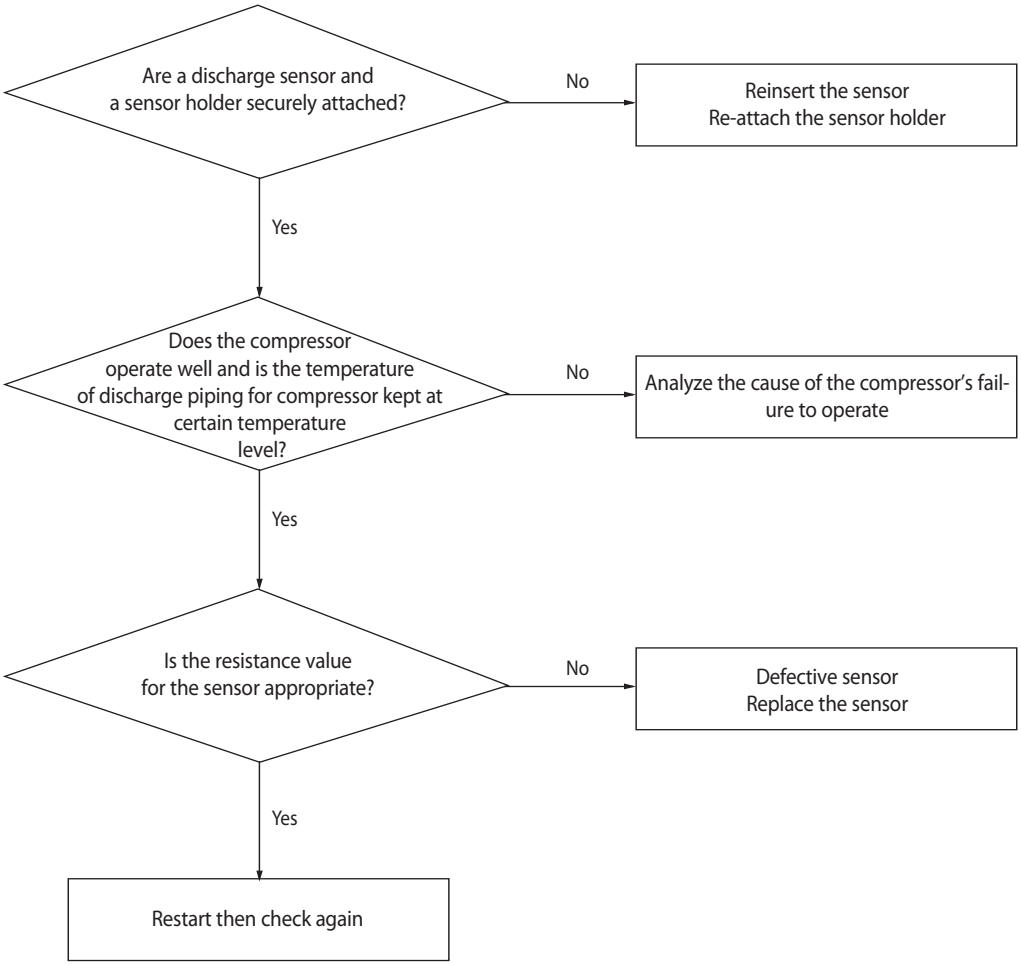
1. How to check



Temperature (°C)	Resistance (KΩ)
130	8.9
120	11.2
100	18.5
80	32
60	59
25	200
20	242
10	362
0	553

4-3-40 Compressor's Discharge Temperature Sensor dislocation error

1. How to check



4-3-41 E265 : Dislocation error of Compressor SUMP Temperature (oil temperature) Sensor

Outdoor unit display	E265 (digital compressor or fixed compressor 1)
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Sump (oil) temperature sensor dislocation error

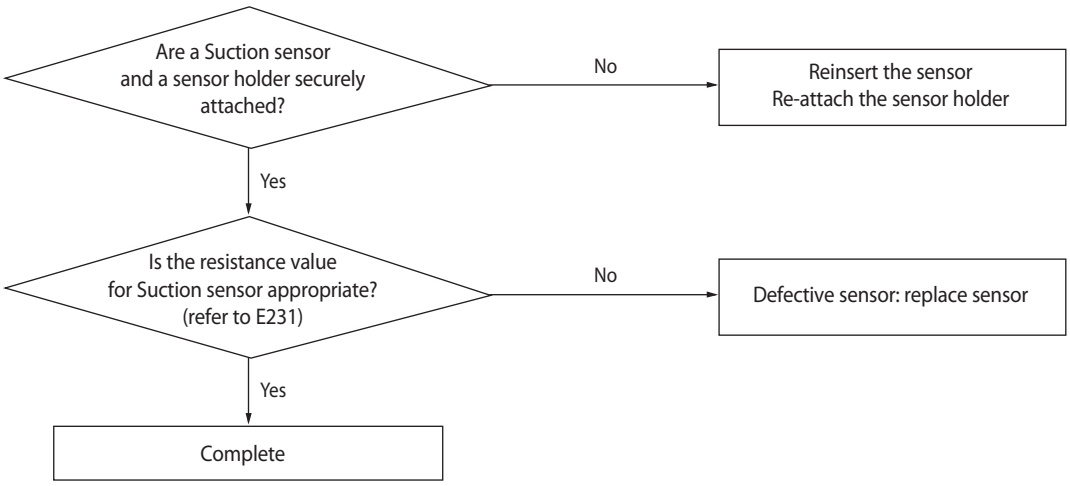
1. How to diagnose
   1) If the Sump temperature right before the start of compressor = Tsump.ini, current compressor's SUMP temp =Tsump. real,
      When the difference between Tsump.ini and Tsump.real is an absolute value so that it cannot be more than 2˚C,
      In other words, the condition of Tsump.real-Tsump.ini<2˚C has been satisfied for 60 minutes since a compressor started, it is diagnosed as an error.
      After 60 minutes of compressor operation, there will be no Sump sensor dislocation detection.

2. How to check
   1) Check if a sensor of the relevant compressor has been dislocated in accordance with error code, assemble and correct the error.

4-3-42 E269 : Dislocation error of Suction Temperature Sensor

Outdoor unit display	E269
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• The suction temperature of compressor right before its operation = Tsuc.ini, current temperature of compressor = Tsuc, real, if the condition of Tsuc.real-Tsuc.ini<2˚C kept for 30 minutes, it is diagnosed as error
Cause of problem	• Suction temperature sensor dislocation error

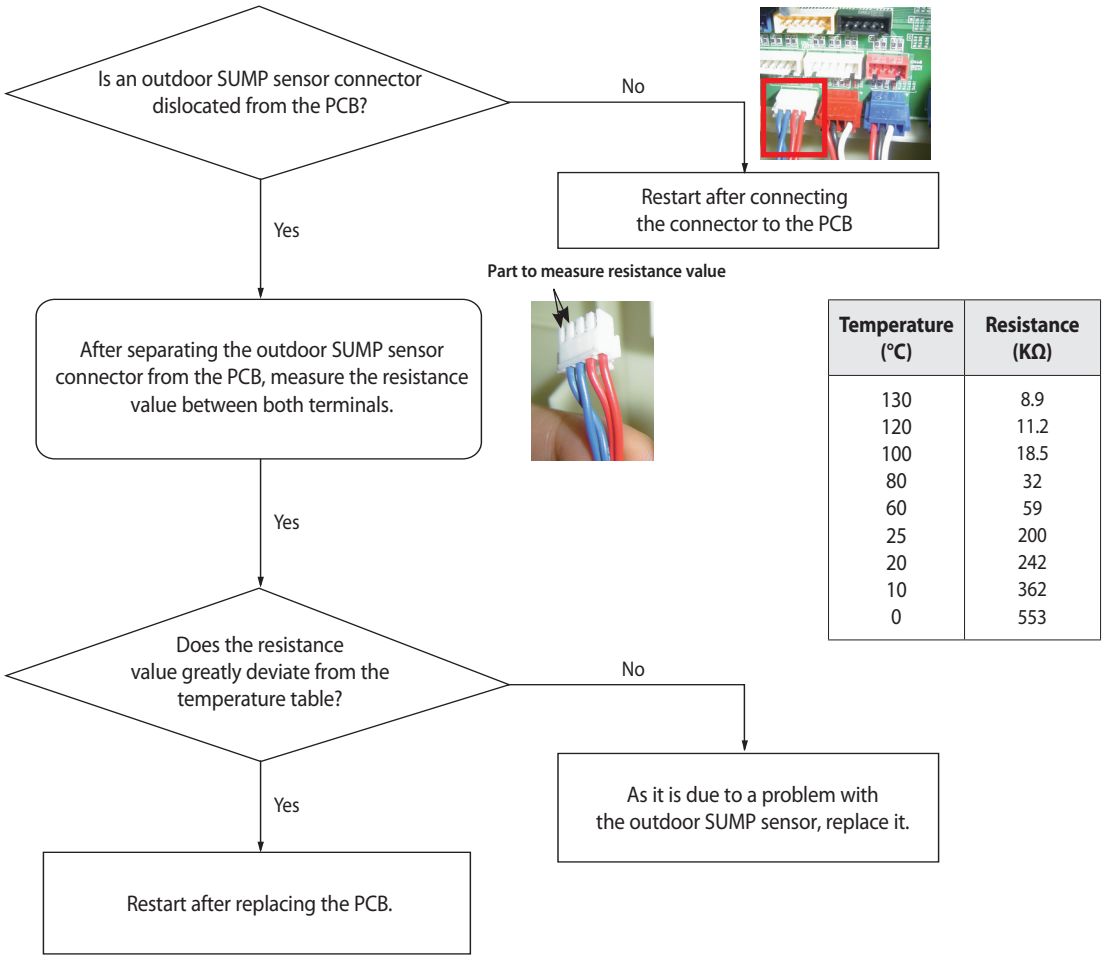
1. How to check



4-3-43 SUMP Temperature Sensor error (Open/Short)

Outdoor unit display	E271
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

1. How to check



Temperature (°C)	Resistance (KΩ)
130	8.9
120	11.2
100	18.5
80	32
60	59
25	200
20	242
10	362
0	553

4-3-44 High Pressure Temperature Sensor error (Open/Short)

Outdoor unit display	E291
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

■ **How to detect OPEN/SHORT error in Low/High pressure sensor**

1. During oil retrieval, omit the error detection and start detecting 5 minutes after complete operation.
2. During safety start operation, omit the error detection and start detecting 5 minutes after complete operation.
3. During defrost operation, omit the error detection and start detecting 5 minutes after complete operation
4. SHORT error detection: carry out error detection only if it is under 0.4V.
5. During refrigerant refill/retrieval, omit low pressure sensor error detection.

4-3-45 Low Ppressure Temperature Sensor error (Open/Short)

Outdoor unit display	E296
Indoor unit display	◑(Operation) ◑(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

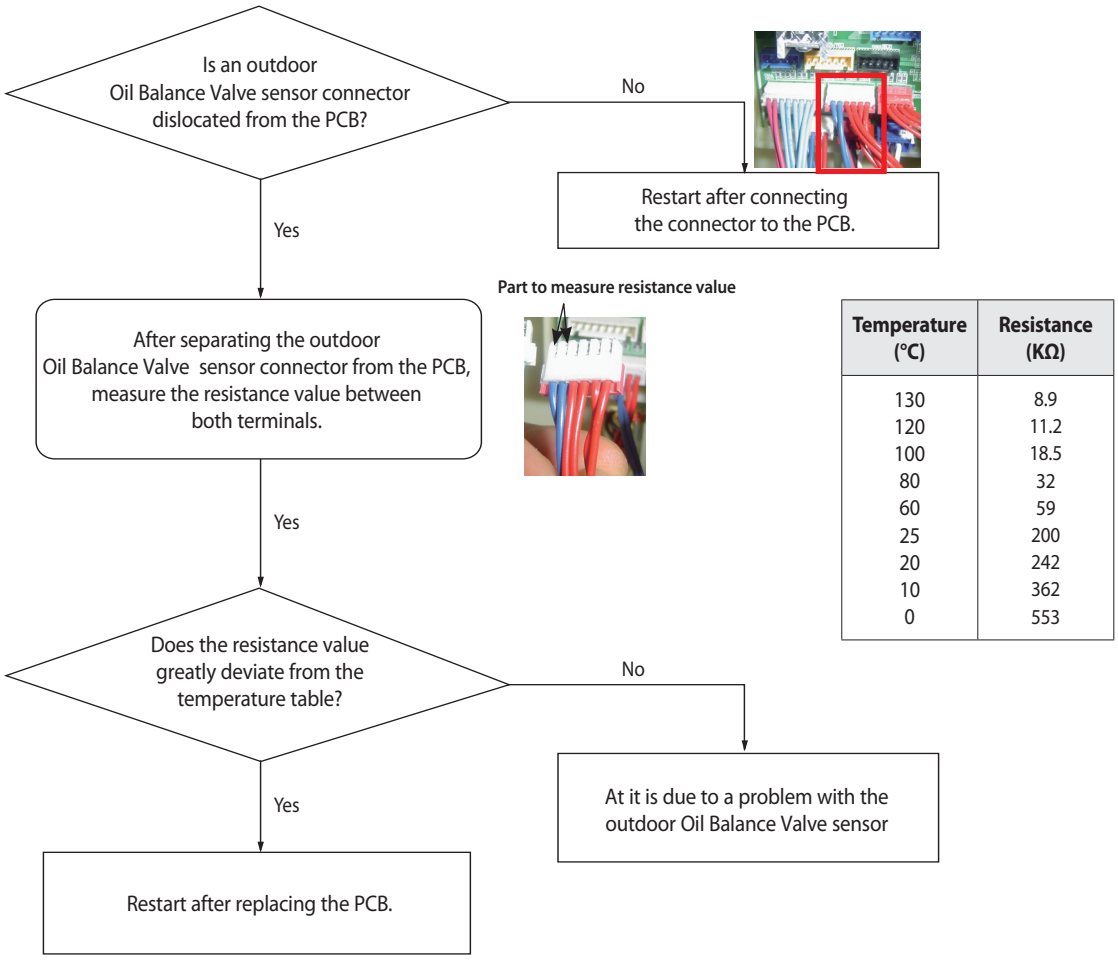
■ **How to detect OPEN/SHORT error in Low/High pressure sensor**

1. During oil retrieval, omit the error detection and start detecting 5 minutes after complete operation.
2. During safety start operation, omit the error detection and start detecting 5 minutes after complete operation.
3. During defrost operation, omit the error detection and start detecting 5 minutes after complete operation
4. SHORT error detection: carry out error detection only if it is under 0.4V.
5. During refrigerant refill/retrieval, omit low pressure sensor error detection.

4-3-46 Oil Balance Valve Temp. Sensor error (Open/Short)

Outdoor unit display	E307
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

1. How to check

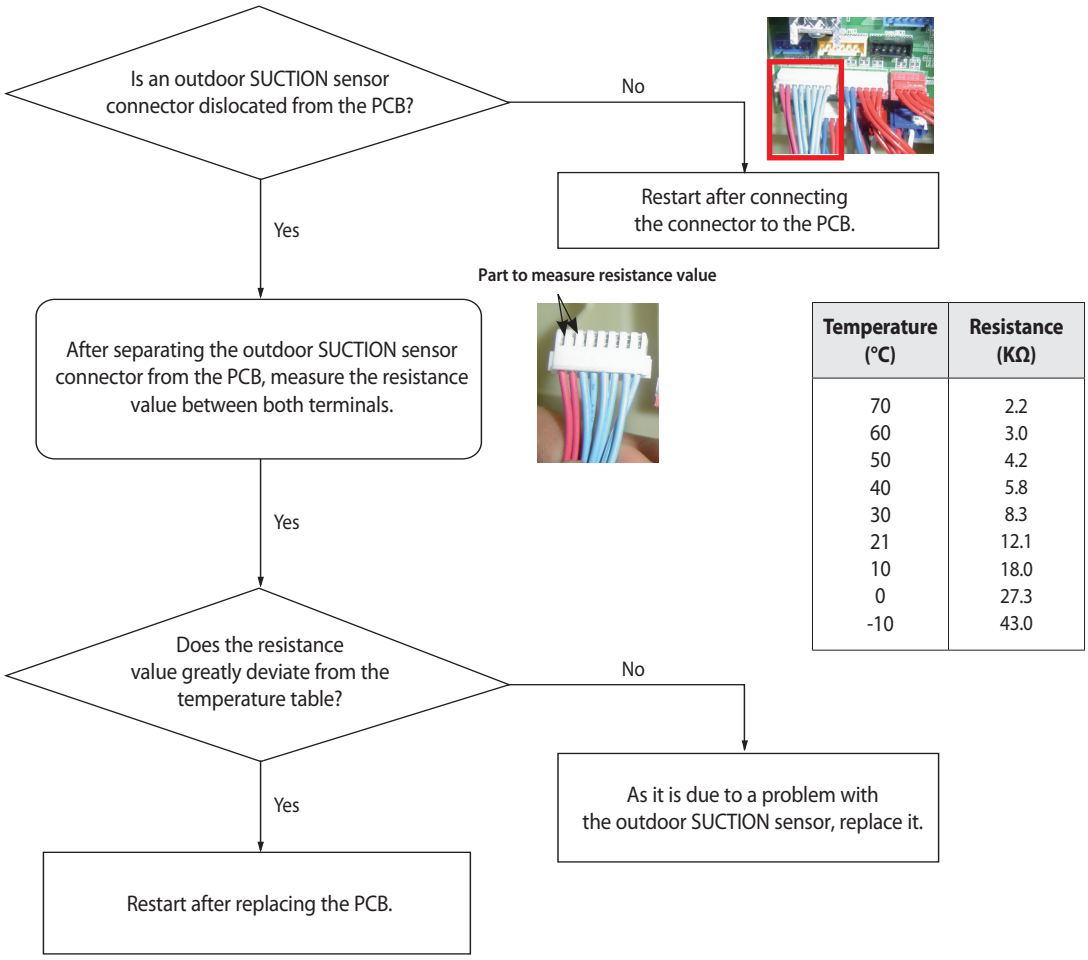


Temperature (°C)	Resistance (KΩ)
130	8.9
120	11.2
100	18.5
80	32
60	59
25	200
20	242
10	362
0	553

4-3-47 SUCTION Temperature Sensor error (Open/Short)

Outdoor unit display	E308
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

1. How to check

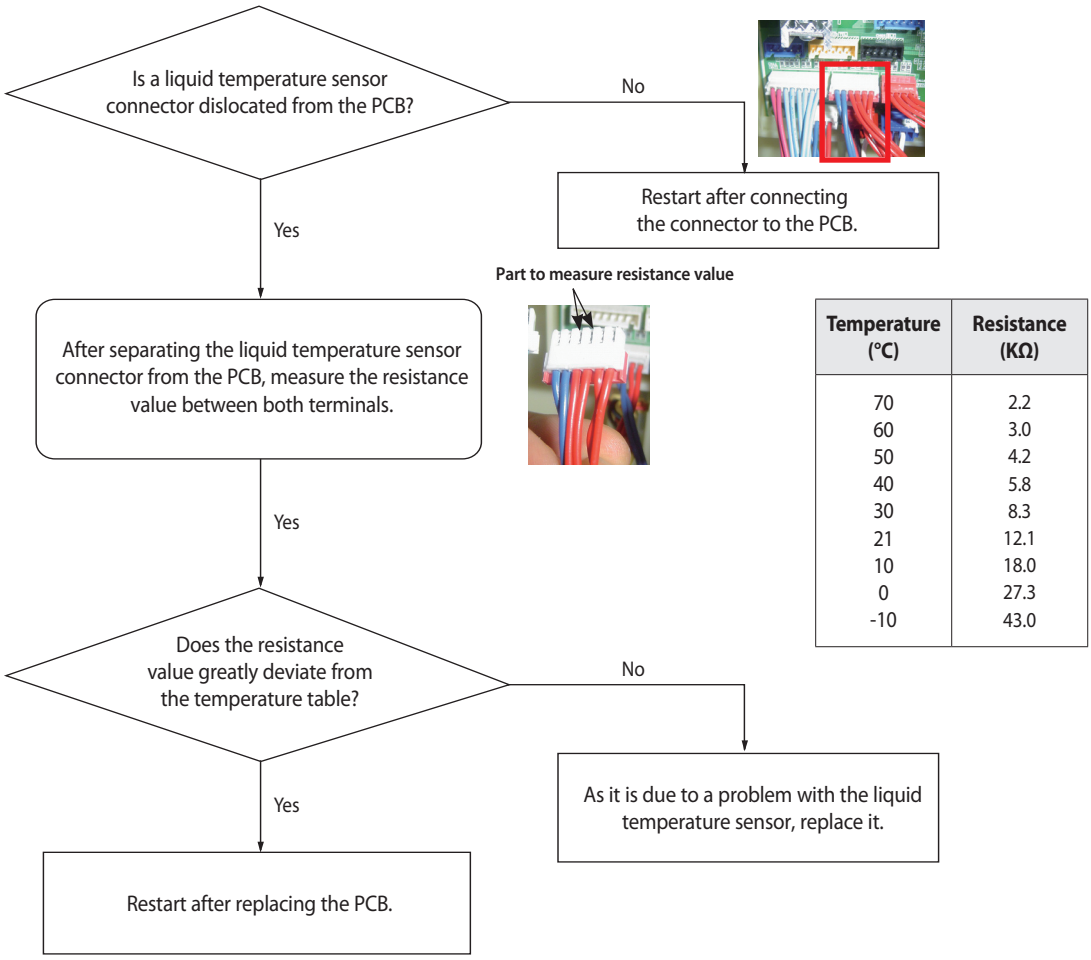


Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-48 Double pipe temperature sensor error

Outdoor unit display	E311
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

1. How to check

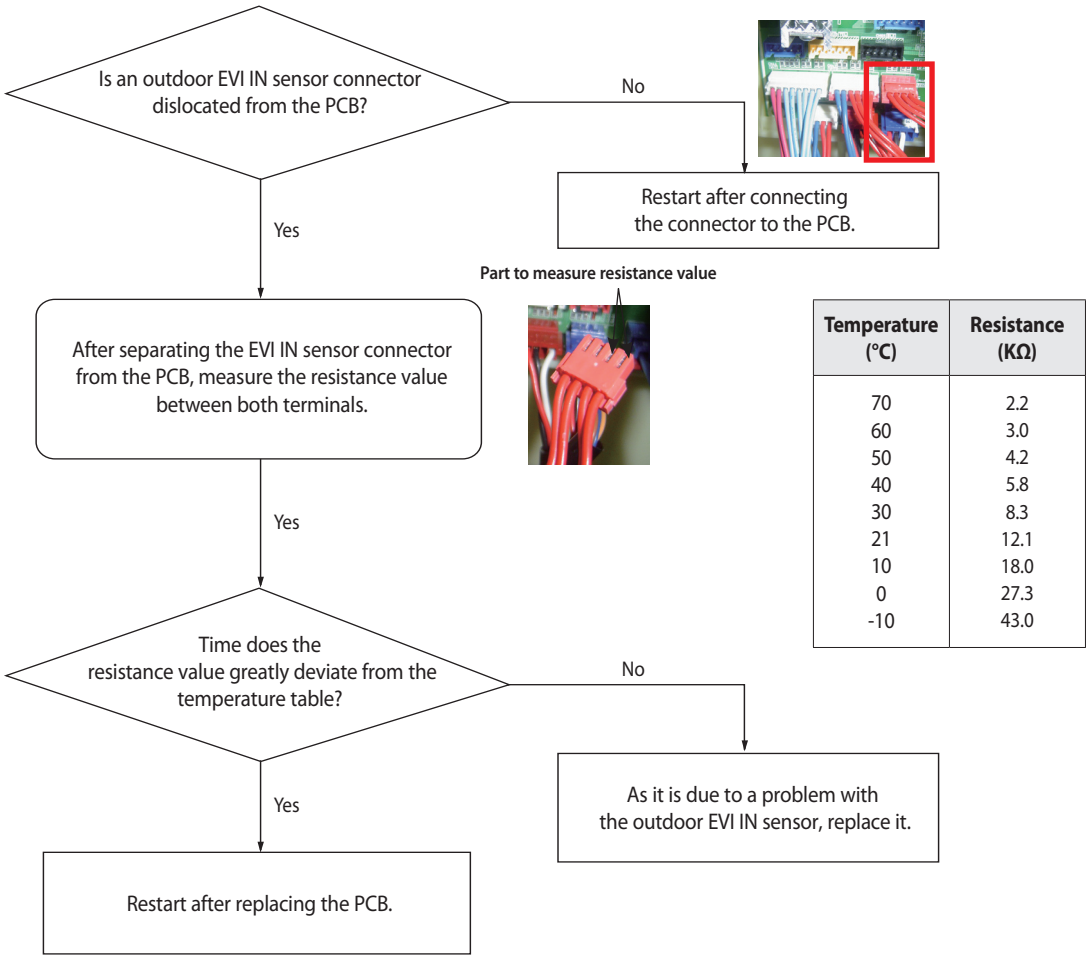


Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-49 EVI IN Temperature Sensor error (Open/Short)

Outdoor unit display	E321
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

1. How to check

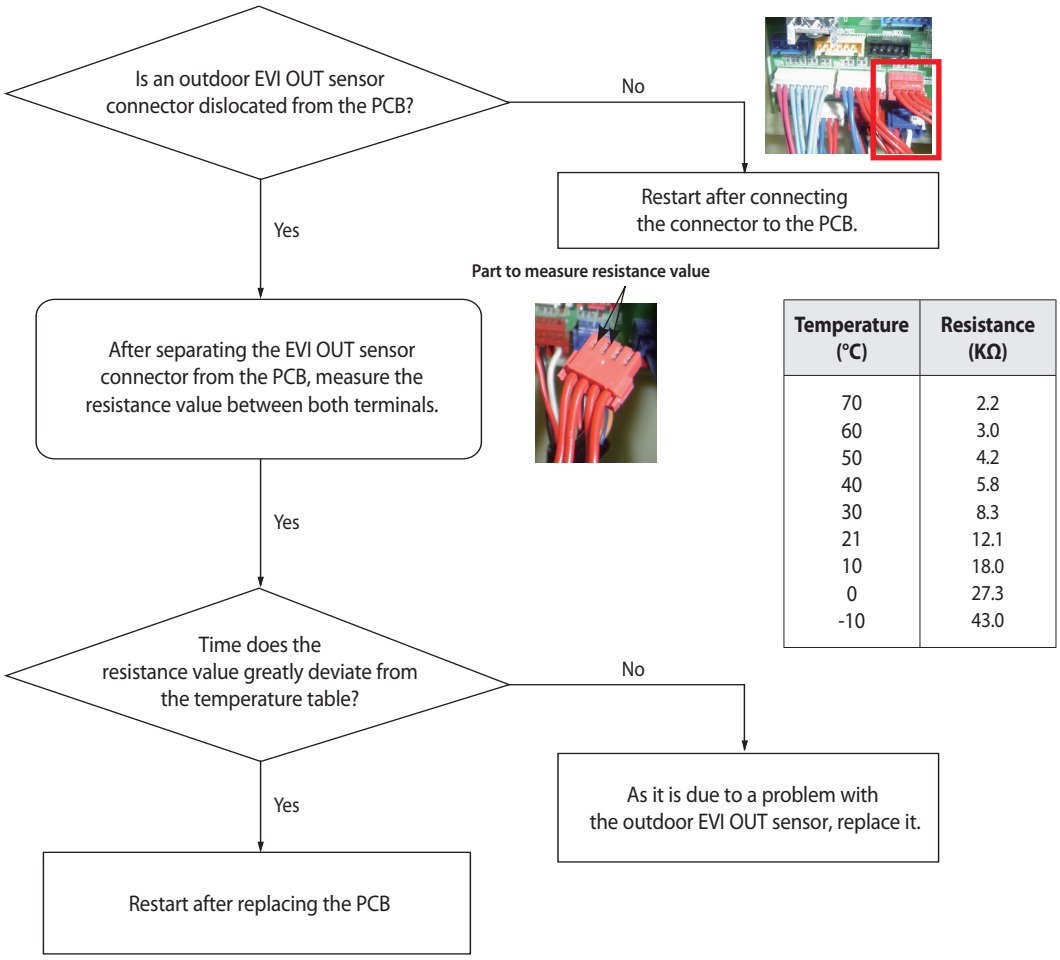


Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-50 EVI OUT Temperature Sensor error (Open/Short)

Outdoor unit display	E322
Indoor unit display	◑(Operation) ×(Timer) ◑(Fan) ×(Filter) ×(Defrost)
Criteria	• Refer to how to determine below
Cause of problem	• Wire breaking or failure of the relevant sensor

1. How to check

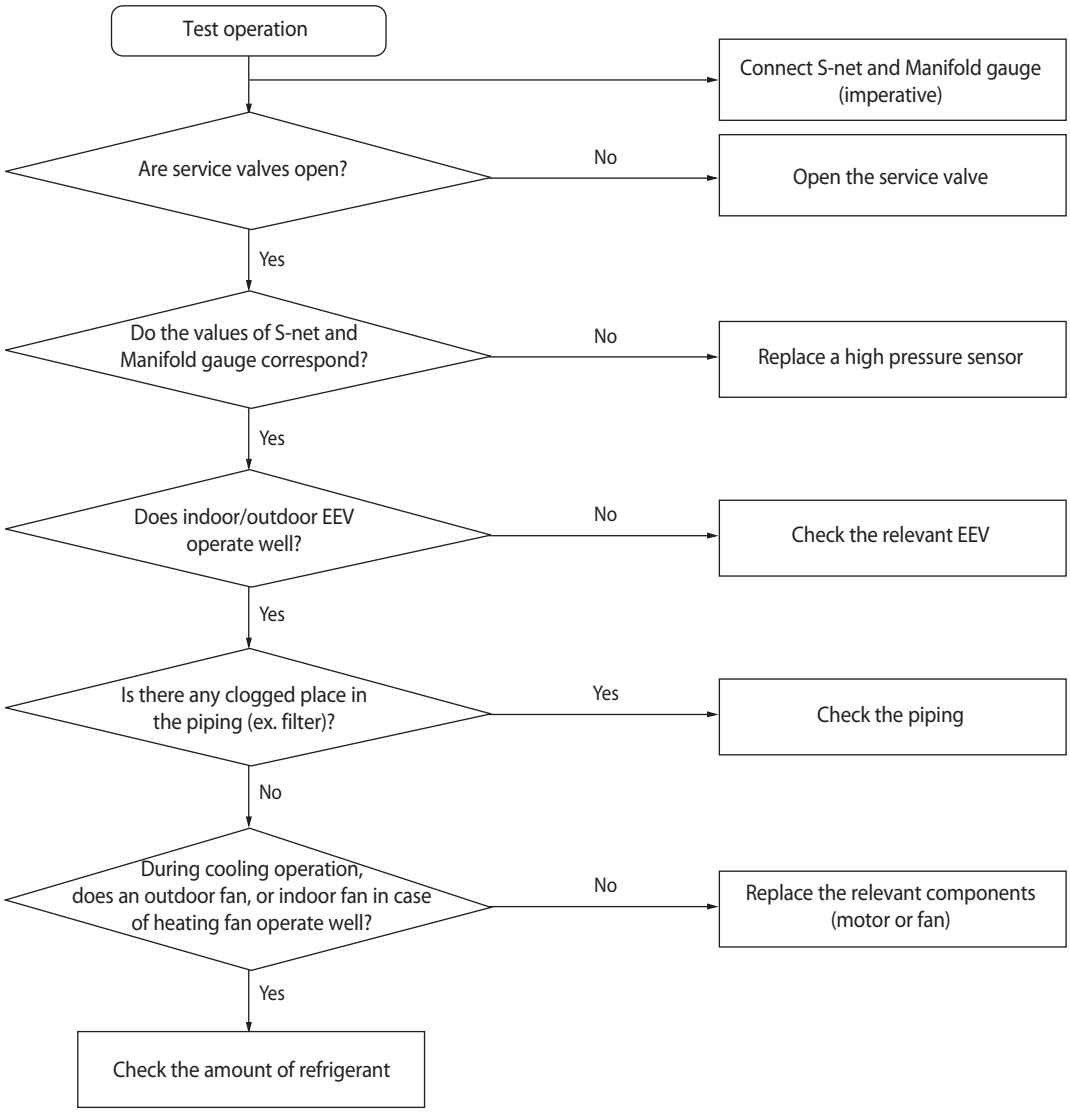


Temperature (°C)	Resistance (KΩ)
70	2.2
60	3.0
50	4.2
40	5.8
30	8.3
21	12.1
10	18.0
0	27.3
-10	43.0

4-3-51 E407 : Comp. Down due to a Protective Control of High pressure

Outdoor unit display	E407
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Detect when the value of high pressure sensor is over 41kg/cm^2
Cause of problem	**<During cooling operation>** • Problem with Outdoor unit fan motor (stall, defect) • Outdoor heat exchanger contamination • Locked service valve/excessive refrigerant •Motor driver defect or wire-breaking • Defective SSR for fan control **<During heating operation>** • Problem with Outdoor unit fan motor (stall, defect) • Locked service valve/excessive refrigerant • Defective fan motor capacitor or wire-breaking

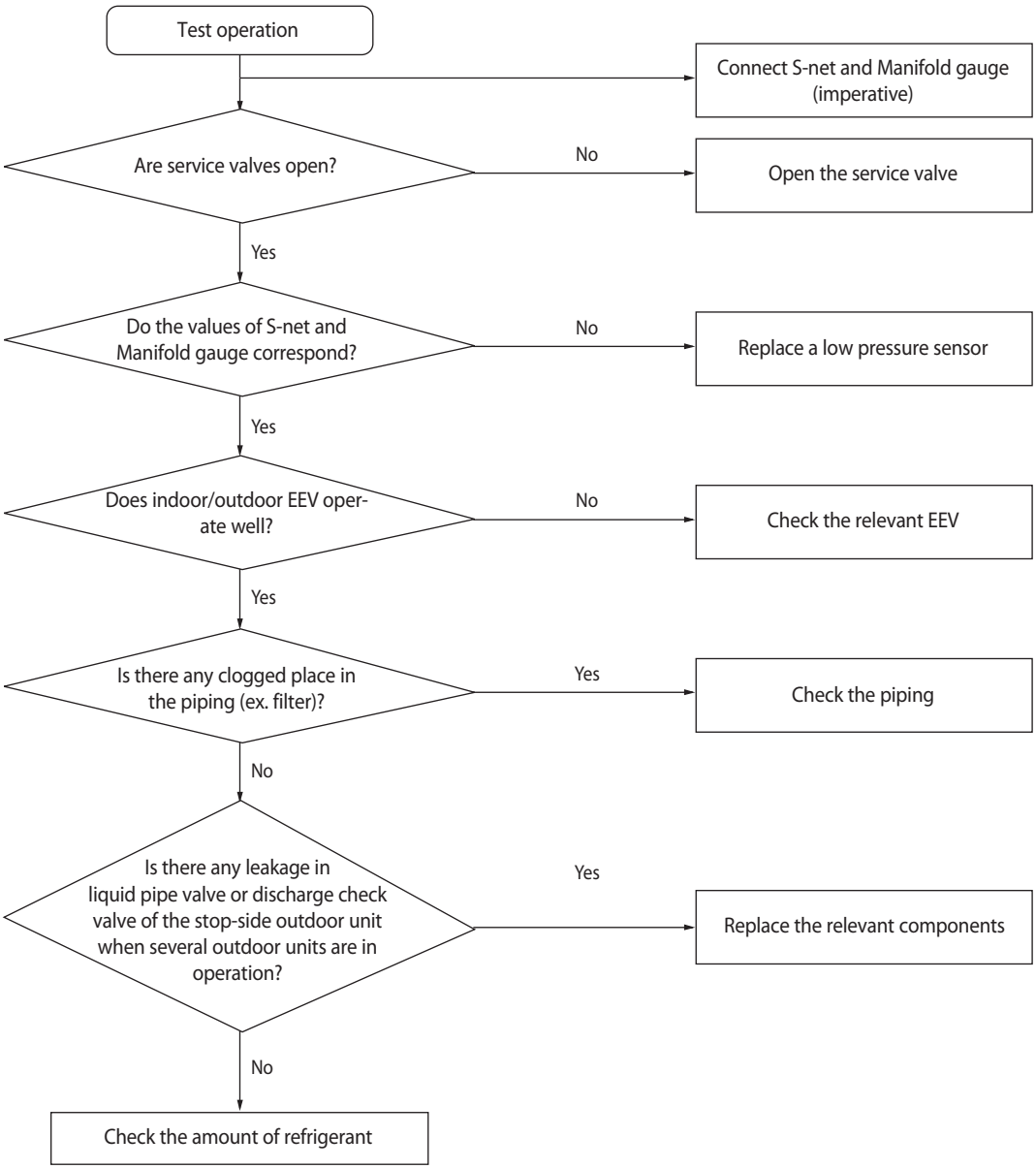
1. How to check



4-3-52 E410 : Comp. Down due to a Protective Control of Low Pressure

Outdoor unit display	E410
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Detect when the value of low pressure sensor is below 2.6kg/cm^2 during cooling operation, 1.4kg/cm^2 during heating operation
Cause of problem	• Insufficient refrigerant • Clogged electronically operated valve • Clogged service valve • Compressor unloading defect • Defective low pressure sensor • Leakage in discharge check valve of the compressor in the stop-side outdoor unit • When used in a temperature condition that does not fall within the usage condition (outdoor air temperature during heating operation –below 20˚C, outdoor air temperature during cooling operation – below -5˚), this error may occur

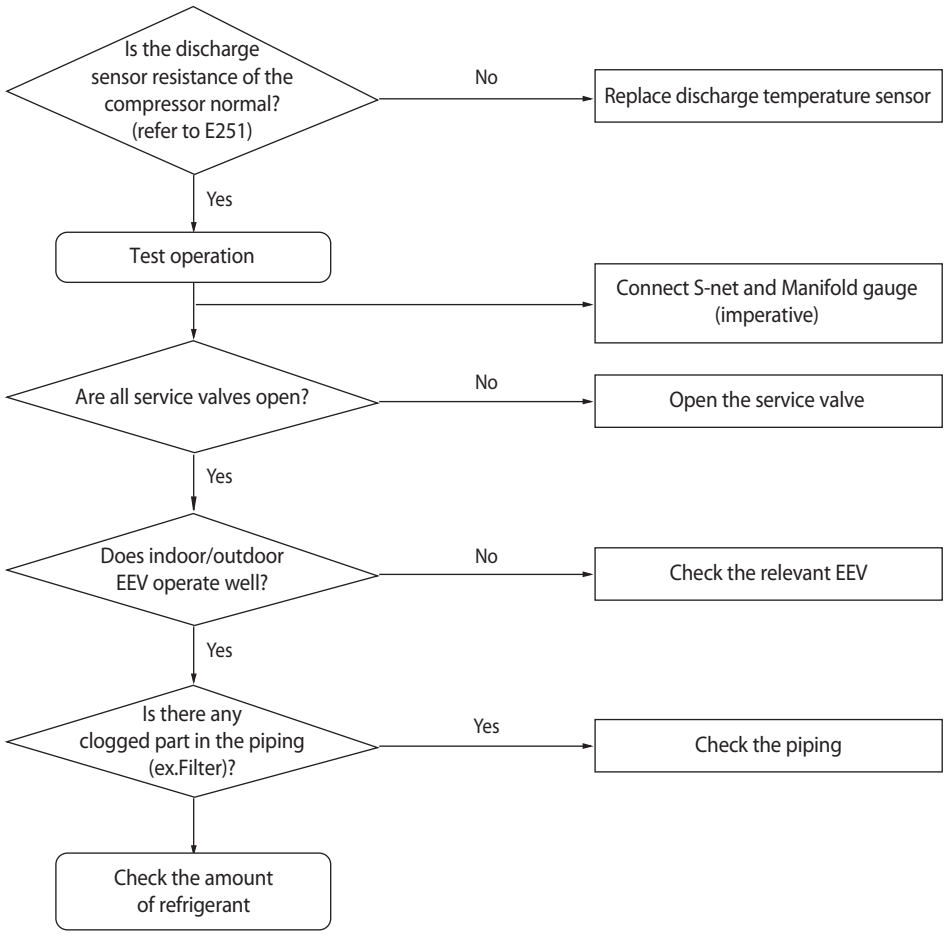
1. How to check



4-3-53 E416 : Comp. Down due to Discharge Temperature Sensor of a Compressor

Outdoor unit display	E416
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Detect when the value of compressor's discharge temperature sensor is over 135°C
Cause of problem	• Insufficient refrigerant • Clogged indoor & outdoor electronically operated valves • Clogged service valve • Defective discharge temperature sensor • clogged piping and/or filter • Liquid EEV breakdown • Liquid Tube valve breakdown • Leakage in discharge check valve of the compressor in the stop-side outdoor unit

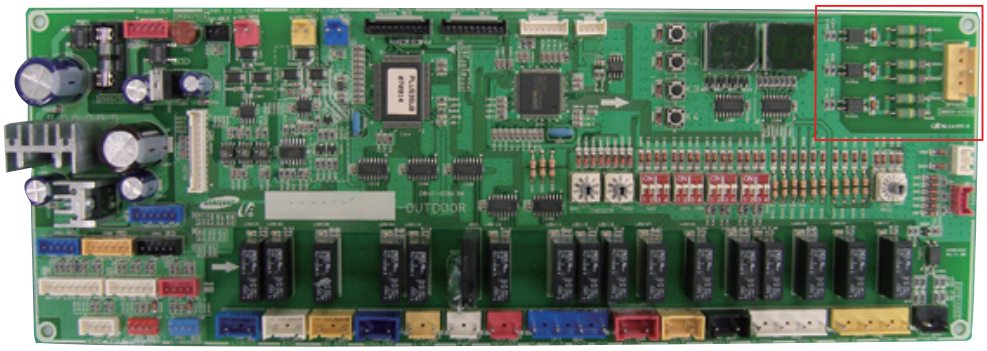
1. How to check

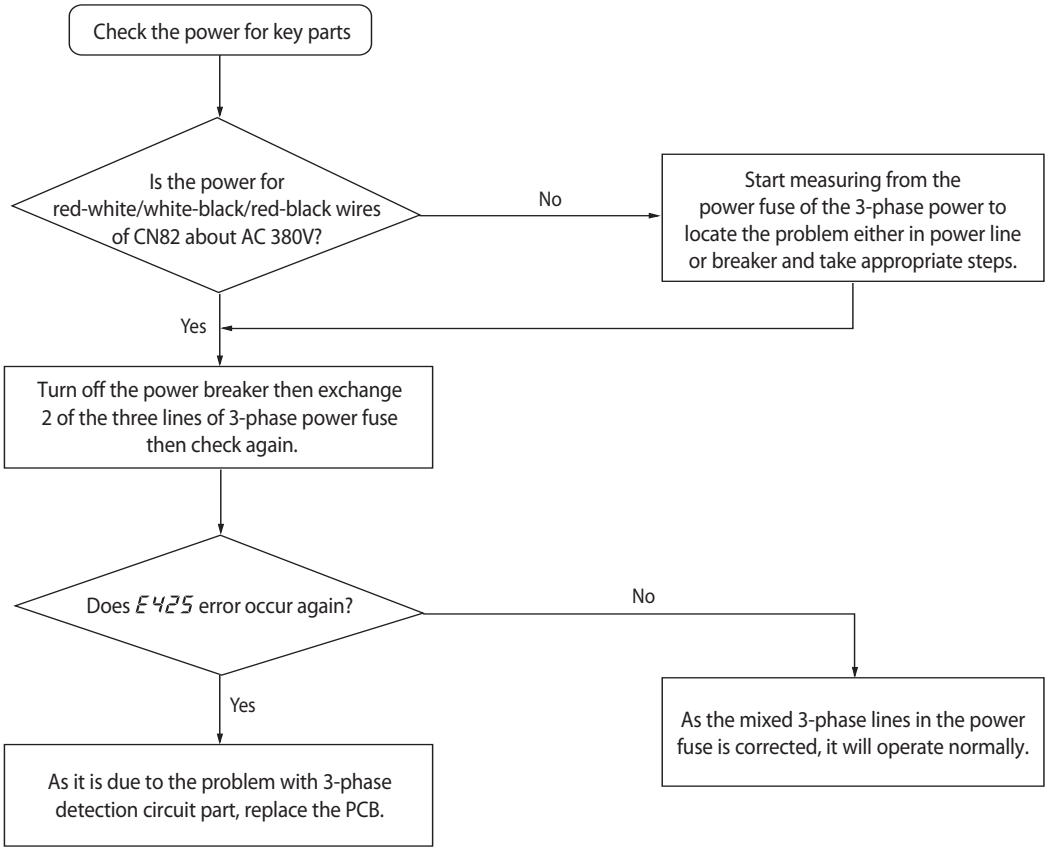


4-3-54 3 Detection of phase negative voltage sequence, Phase fail

Outdoor unit display	E425
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• When comparing the order of the wave form of the 3 phase detection circuit, there is mixed order or a failure to have one or all of phase power (When phase power is back to normal , E425 is automatically released)
Cause of problem	• 3-phase power L1(R), L2(S), L3(T) wire-breaking error • Missing input of 3-phase power

1. How to check
   1) Check the 3-phase detection part power on the PCB of outdoor unit
   2) The color of wire is red, white, and black for 3-phase detection part, respectively. (Please be careful not to mix the colors or order)

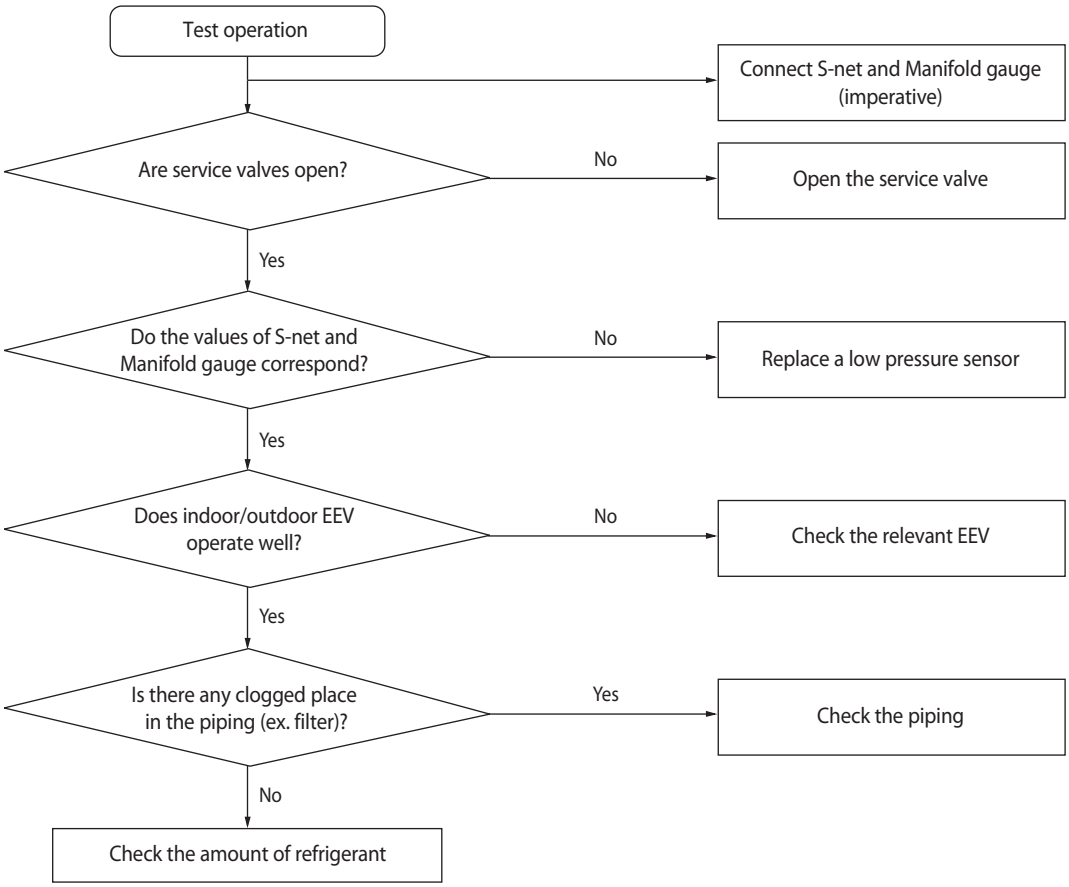




4-3-55 E428 : Comp. Down due to compression rate control

Outdoor unit display	E428
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• The ratio of (high pressure +1)/(low pressure +1) is over 8.5 for more than 10 minutes
Cause of problem	• Indoor/outdoor EEV breakdown and clogged piping / Defective high/low pressure sensor

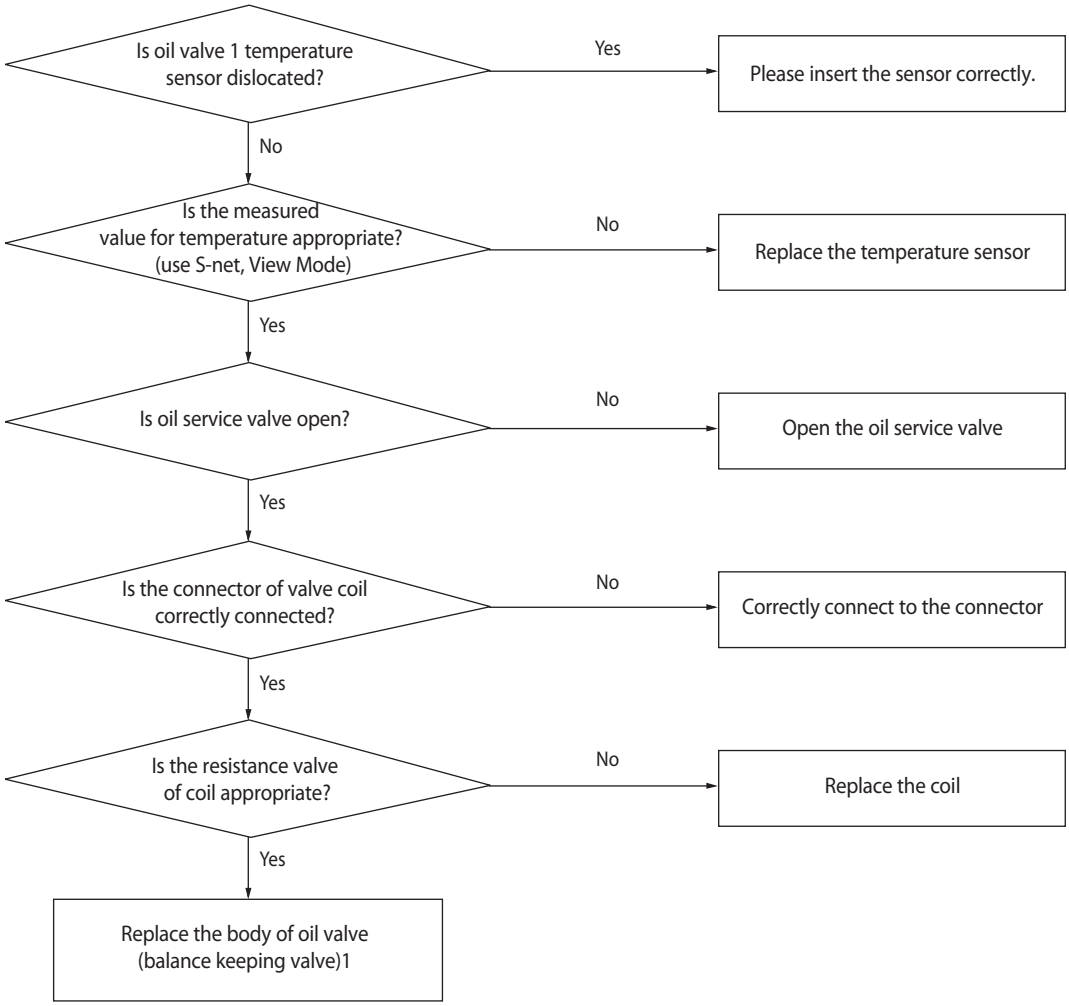
1. How to check



4-3-56 E431 : Self-diagnosis of Oil valve (balance keeping valve) 1 (open or closure breakdown, sensor dislocation or defect)

Outdoor unit display	E431
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	1. When only one outdoor unit is installed, it does not diagnose 2. When more than 2 outdoor units are connected and exchange their oil, the oil valve (balance keeping valve) 1 is broken or temperature sensor of breakdown detection for balance keeping valve 1 is dislocated, the error is displayed. 3. When temperature rises for more than 5bC after closing balance keeping valve 1 and opens hot gas bypass before entering a balance keeping operation, the error is displayed. 4. At the stage of releasing oils during balance keeping operation, if there is less than 7°C temperature change after opening an oil valve (balance keeping valve) and opening the hot gas bypass, the error is displayed.
Cause of problem	• Oil valve (balance keeping valve)'s temperature sensor dislocation • Oil valve (balance keeping valve) breakdown • Coil defect or terminal contact defect

1. How to check



● When replacing an oil valve, never use a welder on the balance keeping piping but use a copper pipe cutter then proceed with the work. (Oil in the balance keeping piping might cause a fire.)

4-3-57 E440, E442 : Prohibition of the operation of Compressor due to OoutdoorTemperature

Outdoor unit display	E440 (prohibit heating operation in outdoor temperature over 30°C) E442 (prohibit heat filling operation in outdoor temperature over 15°C)
Indoor unit display	No sign
Criteria	E440 : Right before an outdoor unit starts heating operation by On signal of an indoor Remocon, the error occurs and prohibits the operation in outdoor temperature over 30°C E442 : Right before operating heat refrigerant filling mode by the K1 switch of an outdoor PCB, the error occurs and prohibits the operation in outdoor temperature over 15°C
Cause of problem	• Operation Prohibition mode by the indoor temperature limit

1. How to check
   The above error code is not caused by a product's problem but a function to protect the product by limiting the available temperature range so please refer to the usable temperature range in the product manual.
   If the error code is displayed despite a condition that does not belong to any of the above diagnosis methods, read the temperature sensor value of the outdoor inlet air with View Mode or S-net, and if the actual outdoor temperature is different, please replace the temperature sensor.

4-3-58 Instantaneous Blackout

Outdoor unit display	E452
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Temperary stop of a compressor due to instantaneous blackout
Cause of problem	• Temperary stop of a compressor due to instantaneous blackout

4-3-59 Error by High Temperature in an Outdoor Fan Motor

Outdoor unit display	E453
Indoor unit display	–
Criteria	• When an operating outdoor fan motor is overheated for more than 110°C
Cause of problem	• Indoor fan motor lock or defect

1. How to check
   1) As it is a function that is programmed to protect overheating or motor protection, lower the rotational frequency of the motor to cool it down, there would be no problem as long as the motor operates.
   2) Check if outdoor fan motor rotates or is locked
   3) If it is locked, it is possible to operate by removing the cause of the lock

4-3-60 RPM Error of an Outdoor Fan Motor

Outdoor unit display	E454
Indoor unit display	–
Criteria	• When an operating outdoor fan motor's rotational frequency is more than 100rpm difference
Cause of problem	• Outdoor fan motor lock or defect

1. How to check
   1) Error signal can occur for the operational problem. As it is programmed to try to restart several times to operate the motor, if motor is operating, there would be no problem.
   2) Check if outdoor fan motor rotates or is locked
   3) Check the motor, the contact status of the signal terminal
   4) If motor does not operate, it is due to a motor defect.

4-3-61 Over-Voltage Error of an Outdoor Fan Motor

Outdoor unit display	E456
Indoor unit display	–
Criteria	• When the current of an operating outdoor fan motor is more then 7A for 1 minute
Cause of problem	• Outdoor fan motor lock or defect • Occurs by abrupt start or overload

1. How to check
   1) Check if outdoor fan motor rotates or is locked
   2) If it is not locked, the above error occurs due to overload and signals by abnormal operation, and it indicates the overload status. Thus, it is not breakdown.
   3) Need to check if there is a problem with fan load status

4-3-62 Counter-Rotation Error of an Outdoor Fan Motor

Outdoor unit display	E457
Indoor unit display	–
Criteria	• When the rotational direction of an outdoor fan motor is counter-clockwise before operating
Cause of problem	• Due to wind that can run the fan counter-wise

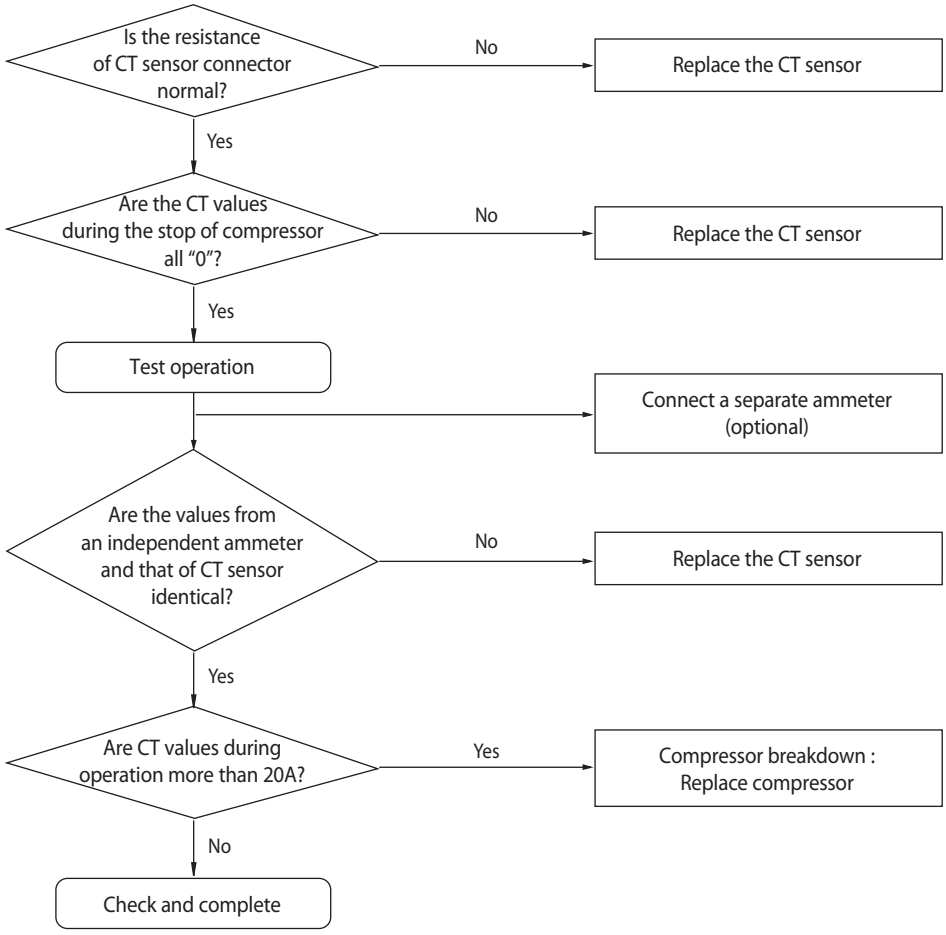
1. How to diagnose
   1) Check if the start instruction of outdoor unit's fan is counter-clockwise

2. How to check
   1) It is a signal to protect a motor by checking the operational condition of the outdoor unit's fan motor without power so as not to operate it in counter-clockwise condition.
   2) Check if there is wind strong enough to force a fan to rotate counter-clockwise where the outdoor unit is installed.

4-3-63 E458 : Over-voltage error of Compressor

Outdoor unit display	E458
Indoor unit display	×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost)
Criteria	• Display the error when the CT sensor value of the relevant compressor is over 70A for 3 minutes or more
Cause of problem	• Compressor breakdown / defective CT sensor

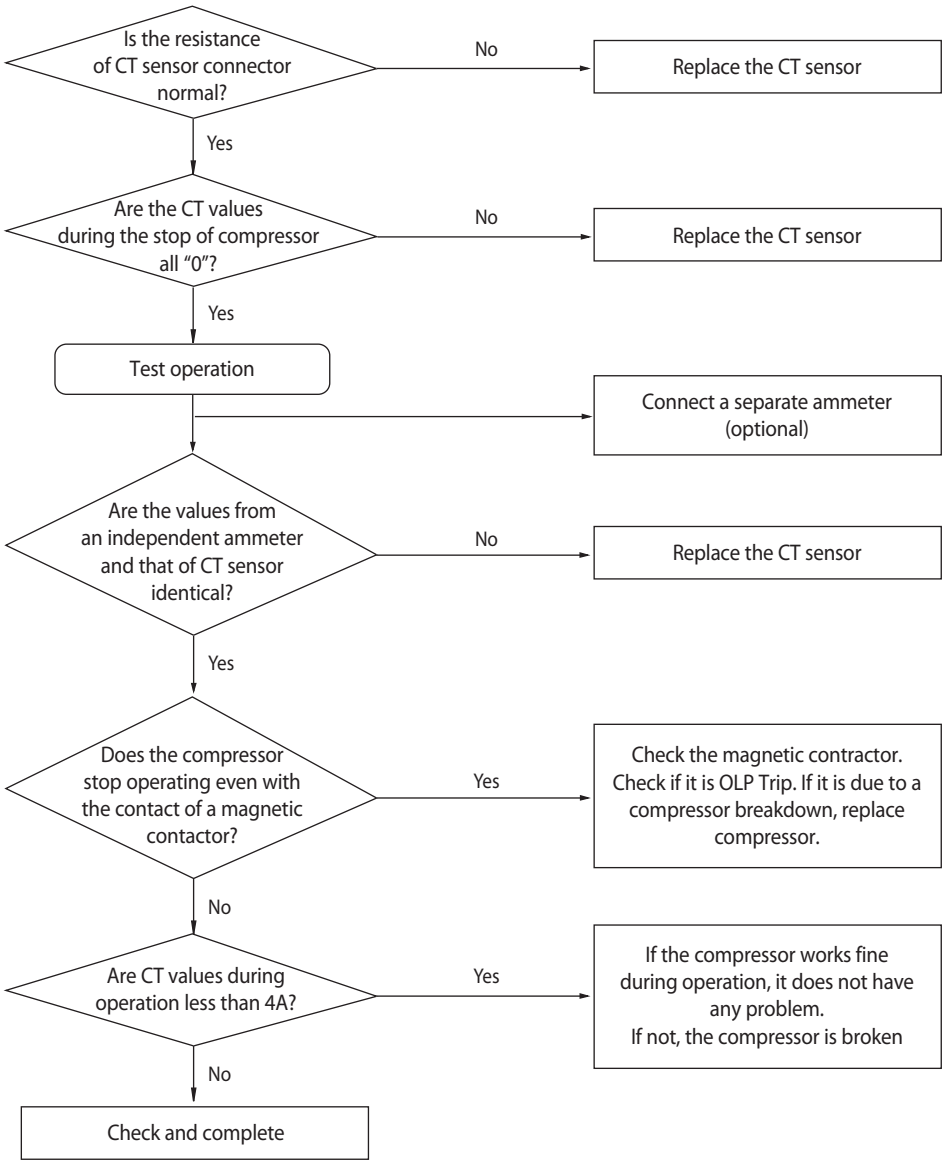
1. How to check



4-3-64 E461 : Low-amperage error of Compressor

Outdoor unit display	E461 (Compressor 1, Compressor 2, Compressor 3)
Indoor unit display	No signal
Criteria	• Display the error when the CT sensor value of the relevant compressor is below 4A for five hours or more. When it operates as 1A for more than 1 minute, reset timer
Cause of problem	• Compressor breakdown/defective CT sensor/OLP Trip

1. How to check



4-3-65 Breakdown of an EEV(1st)

1. How to diagnose
   Detect only on cooling operation. (No detection during heating operation.)
   During cooling operation, the temperature of the inlet or outlet ducts of heat exchanger is kept lower than 0˚C for more than 20 minutes without cessation

2. How to check
   1) Check if the wire of an electronic expansion valve is correctly connected to the PCB of indoor unit.
   2) Check if the coil of an electronic expansion valve is correctly plugged into the main body.
   3) Check if there is any rust on the surface of the coil of an electronic expansion valve with the naked eye, and then check the resistance between each terminal to find any wire breaking or short circuit.
   4) Press the RESET KEY (K3) of the outdoor unit then see if the same error occurs.
      - In case of closure problem, operate the indoor unit in which the error has occurred.
      - In case of opening problem, please do not operate the indoor unit in which the error has occurred.
   5) If there is no problem with the above checkup items, replace the electronic expansion valve of the troubled indoor unit.
      - As an electronic expansion valve replacement is tricky work that requires collecting refrigerants in all systems, please make sure to check the above items before replacement.

4-3-66 Breakdown of an EEV closure (1st)

1. How to diagnose

1) During cooling operation (It must satisfy each of the following conditions for over 20minutes.)

Tcond, out - Tair, out > 3℃	OK
Tair, in - Teva, out > 4℃	NO
Tair, in - Teva, out > 4℃	NO
Compressor in operation & Indoor unit operation & Thermo On	OK
Error details	EEV closure breakdown

2) During heating operation (must satisfy each of conditions below)

- When more than 2 indoor units are on Thermo On heating operation.
- When average high pressure is over 18kg/cm^{2}G
- 5 minutes after finishing Safety Start
- Keep Indoor units' T(Eva_In)<T(Room) +3˚C and T(Eva_Out)<T(Room) +3˚C condition for more than five minutes

2. How to check

1) Check if the wire of an electronic expansion valve is correctly connected to the PCB of indoor unit.
2) Check if the coil of an electronic expansion valve is correctly plugged into the main body.
3) Check if there is any rust on the surface of the coil of an electronic expansion valve with the naked eye, and then check the resistance between each terminal to find any wire breaking or short circuit.
4) Press the RESET KEY (K3) of the outdoor unit then see if the same error occurs.
   - In case of closure problem, operate the indoor unit in which the error has occurred.
   - In case of opening problem, please do not operate the indoor unit in which the error has occurred.
5) If there is no problem with the above checkup items, replace the electronic expansion valve of the troubled indoor unit.
   - As an electronic expansion valve replacement is tricky work that requires collecting refrigerant in all systems, please make sure to check the above items before replacement.